

43

STANDING COMMITTEE ON ENERGY

(2013-14)

FIFTEENTH LOK SABHA

MINISTRY OF POWER

DEVELOPMENT OF HYDRO SECTOR

FORTY THIRD REPORT



**LOK SABHA SECRETARIAT
NEW DELHI**

December, 2013/Agrahayana, 1935 (Saka)

FORTY-THIRD REPORT
STANDING COMMITTEE ON ENERGY
(2013-2014)

(FIFTEENTH LOK SABHA)

MINISTRY OF POWER

DEVELOPMENT OF HYDRO SECTOR

Presented to Lok Sabha on 13.12.2013

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LOK SABHA SECRETARIAT
NEW DELHI

December, 2013/Agrahayana, 1935 (Saka)

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**COMPOSITION OF THE STANDING COMMITTEE ON ENERGY
(2013-14)**

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- | | | |
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| 2. | Shri N.K.Pandey | Director |
| 3. | Smt. L.Nemjalhing Haokip | Under Secretary |

INTRODUCTION

I, the Chairman, Standing Committee on Energy having been authorized by the Committee to present the Report on their behalf, present this 43rd Report on the subject 'Development of Hydro Sector' of the Ministry of Power.

2. The Committee took briefing and evidence of the representatives of the Ministry of Power on 11th July, 2013. The Committee wish to express their thanks to the representatives of the Ministry for appearing before the Committee for evidence and furnishing the information, desired by the Committee in connection with the issues relating to the subject.

3. The Report was considered and adopted by the Committee at their sitting held on 11th December, 2013.

4. The Committee place on record their appreciation for the valuable assistance rendered to them by the officials of the Lok Sabha Secretariat attached to the Committee.

5. For facility of reference and convenience, the observations and recommendations of the Committee have been printed in bold letters in Part-II of the Report.

NEW DELHI
12 December, 2013
Agrahayana 21, 1935 (Saka)

MULAYAM SINGH YADAV,
Chairman,
Standing Committee on Energy

REPORT
PART-I
NARRATION ANALYSIS

I. INTRODUCTORY

The country is going through a phase of gap between demand and supply of power. This gap has to be bridged for overall growth of the country. Hydro power generation is an area which can ensure not only the abridgement of gap in demand and supply, but lead to surplus power in the country if proper attention is paid to harness the hydro potential of the country. Despite the fact that hydro projects entails a very cumbersome process from conception to implementation, yet the final results after the completion of the process are highly rewarding, satisfying and encouraging besides being economical and affordably to the end-users. Hydro power is generated by Central and State Public Sector enterprises as well as by private sector companies.

1.2 Although India has made significant progress towards strengthening and developing its power infrastructures yet capacity addition of power is not commensurating with the exponentially increasing requirements of the people of the country and its economy. National Electricity Policy, 2005 envisaged an ambitious objective of power to all by 2012. Hence, capacity addition in power sector has been one of the major thrust areas of the Government. Owing to its inherent characteristics hydro power can be the best choice in meeting our requirements and bridging the gap between demand and supply.

1.3 Flowing water creates energy that can be captured and turned into electricity. This is called *hydroelectric power* or *hydropower*. Hydro Power is a renewable non-polluting and environmentally benign source of energy. Hydro Power stations have the inherent ability for instantaneous starting, stopping and managing load variations which helps in improving reliability of the power system. Hydro stations are a natural choice for meeting the peak demand. The generation cost is inflation free and in fact reduces over a time. A hydroelectric project has a long useful life extending to well over 50 years and helps in conserving scarce fossil fuels. The generation of electricity from hydroelectric power plants produces no greenhouse gases, toxic waste and particulate matter. Development of hydro power projects also provides the added advantage of opening up avenues for development of remote and backward regions of the country.

1.4 The most common type of hydroelectric power plant uses a dam on a river to store water in a reservoir. Water released from the reservoir flows through a turbine, spinning it, which in turn activates a generator to produce electricity. Another type of hydroelectric power plant - called a pumped storage plant - can even store power. The power is sent from a power grid into the electric generators. The generators then spin the turbines backward, which causes the turbines to pump water from a river or lower reservoir to an upper reservoir, where the power is stored. To use the power, the water is released from the upper reservoir back down into the river or lower reservoir. This spins the turbines forward, activating the generators to produce electricity.

II HYDRO POTENTIAL ASSESSMENT

1.5 The Ministry of Power has stated that the re-assessment studies of hydro-electric potential of the country were completed by the Central Electricity Authority in 1987.

1.6 In reply to a question about the timeline to determine the validity of such studies, the Ministry of Power stated that there is no set timeline to determine the validity of such studies. Regarding practice being followed in other countries for assessing hydro potential it has been replied that:

"No such information is available regarding practice in other countries for assessment of hydro potential in terms of its periodicity. However in India, the first systematic Hydro Electric Survey of India was undertaken by erstwhile Central Water & Power Commission (CW&PC) during 1953-59. Subsequently, the studies for Reassessment of Hydro Electric Potential were undertaken by Central Electricity Authority (CEA) and completed during 1978-87".

1.7 When asked about the need of re-evaluation of the hydropower potential in the country, the Ministry replied as under:

"The reassessment studies carried out earlier were desktop studies, which were based on available survey of India maps at that time and available hydrological data. As such, there is a need for review the hydroelectric potential in the country to take into account the additional hydrological, topographical and other data about upstream and downstream water uses in last 25 years. The proposed review would be carried out taking also into consideration the actual site constraints in terms of site geology, submergence and other aspects including impacts of these projects on the Environment and Forests. A proposal in this regard was examined by the Ministry of Power and the proposal was approved by SFC."

III. HYDRO ELECTRIC POTENTIAL

1.8 India is endowed with an enormous hydro power potential. As on 1st October, 2013 the hydro power potential in terms of Installed Capacity (I.C) is estimated at 1,48,701 MW out of which 1,45,320 MW of the potential consists of hydro electric schemes having installed capacity above 25 MW. It is stated that out of 1,48,701 MW estimated potential of hydro power in the country, 39,788 MW is in operation as on 1st October, 2013 which constitutes about 27 percent of the estimated potential of hydro power and 17 percent of the total installed power capacity of the country i.e 2,28,722 MW.

1.9 The Basin-wise details of present installed capacity of hydroelectric projects furnished by the Ministry is given below (as on 31st May, 2013):

Basin	Identified capacity as per assessment study		Capacity Under Operation		Capacity under construction		Capacity under operation + under construction		Capacity yet to be taken up under Construction	
	Total (MW)	Above 25 MW (MW)	(MW)	(%)	(MW)	(%)	(MW)	(%)	(MW)	(%)
Indus	33832	33028	11124.3	33.68	4686.0	14.19	15810.3	47.87	17217.7	52.13
Ganga	20711	20252	4987.2	24.63	1307.0	6.45	6294.2	31.08	13957.6	68.92
Central Indian Rivers	4152	3868	3147.5	81.37	400.0	10.34	3547.5	91.71	320.5	8.29
West Flowing Rivers	9430	8997	5660.7	62.92	100.0	1.11	5760.7	64.03	3236.3	35.97
East Flowing Rivers	14511	13775	7798.2	56.61	455.0	3.30	8253.2	59.91	5521.9	40.09
Brahmaputra Basin	66065	65400	2120.0	3.24	5292.0	8.09	7412.0	11.33	57988.0	88.67
All India	148701	145320	34837.8	23.97	12240.0	8.42	47077.8	32.40	98242.2	67.60

In addition to above 9 PSS (4785.6 MW) are under operation and 2 PSS (1080 MW) are under construction.

1.10 Regarding the Region-wise hydro electric potential of the country, the Ministry in their reply stated as below:

Region	Probable I.C. (MW)		Capacity Developed (MW)	Under Construction (MW)
	Total as per reassessment Study	Above 25 MW		
Northern	53395	52263	15523	6092
Western	8928	8131	5552	400
Southern	16458	15890	9382	555
Eastern	10949	10680	3139	2383
North Eastern	58971	58356	1242	2810
Total	148701	145320	34838 (23.9%)	12240 (8.4%)
Pump Storage	96524	96524	4785	1080
Total	245225	241844	39623	13320

1.11 When asked about the slow pace of Hydro Electricity Projects, the Power Secretary stated during the evidence that:-

“The progress of the hydel power projects has perhaps not been as fast as it would have been during the last few years. the total installed capacity in the country at present is around 2,25,800 MW. Out of which only 40,000 MW capacity is of hydel power which is just 18% of the total capacity. The share of hydel power projects in the installed capacity steadily declining. In the beginning of the 3rd Five Year Plan period its share was about 45 % whereas today it has come down to 18%. The major reason behind it is that thermal power projects are completed within a span of four to five years whereas the hydel projects, from survey to completion, require eight to twelve years to reach completion. Although, in fact, hydel power projects are better than thermal power projects environmentally. They do not have the much effect on the environment but clearances for the dams and reservoirs under the projects pose a problem due to displacement of villages and people.”

1.12 Elaborating the reasons for the slow pace of development of hydro electric potential in the country, the Ministry in a reply stated:

"Difficult/In-accessible potential sites

Difficult terrain & poor accessibility of the hydro project site takes lot of time & money to develop / maintain the infrastructures like road, communication, establishments, etc. causing the delay in completion of hydro projects.

Land Acquisition problems

Land acquisition is a persistent issue involved in the implementation of hydro projects. Acquisition of land for various locations of the project such as Dam, HRT, Power House, Switch yard etc. delay the commencement / progress of works.

Resettlement & Rehabilitation problems

Dislocation of the people from their houses/fields/workplaces etc. and their resettlement is a sensitive issue and involves a lot of time and money. Many times this issue leads to court cases resulting in delay in project execution/completion.

Environment & Forest clearance issues

Three types of clearances are mandatory from 3 different wings of MoEF i.e. Environmental clearance from EAC, Forest Clearances from FAC & Wildlife Clearances from NBWL. This makes the whole process very cumbersome which otherwise would be easier and less time consuming.

Law & Order problem

Protest by the local people against the construction activities, like blasting, muck disposal, etc. and also for various demands like employment, extra compensation, etc. often create law and order problems and delays the completion of works.

Longer gestation period

Hydro projects take longer time of completion due to large infrastructure development involved in these projects such as Dam structure, water conductor system, power house, tailrace, road development etc and also due to delay in land acquisition, settlement of local disputes etc.

Geological surprises

A large number of HE projects has been delayed due to geological surprises. Geological surprises take place in hydro projects mainly due to inadequate investigation. However, geological surprises cannot be completely ruled out even after adequate investigation. Poor geology in Himalayas also lead to geological surprises. Many hydro projects are held up due to contractual problems subsequent to occurrence of geological surprises.

Inter-state aspects

Sometimes Hydro electric projects get delayed due to inter state river disputes between the concerned States".

IV. STATUS OF DEVELOPMENT OF HYDRO POWER

1.13 Against the estimated potential of 1,48,701 MW of hydro power in the country, as on 1st October, 2013, Installed Capacity of 39,788 MW (of hydropower is under operation, capacity of 13,320 MW is under construction constituting about 9% of the potential with marginal progress in capacity addition over a period of time.

A. Capacity Addition during 11th Five Year Plan (2007-12)

1.14 At the beginning of 11th Plan, the Planning Commission finalized a hydro capacity addition programme of 15,627 MW to be commissioned during the 11th Plan period. However, during the Mid Term review, hydro capacity targets were revised to 8,237 MW (2,922 MW in Central Sector, 2,854 MW in State Sector & 2,561 MW in Private Sector). However, hydro projects with aggregate installed capacity of 5,544 MW (1,550 MW in Central Sector, 2,702 MW in State Sector & 1,292 MW in Private sector) only was commissioned in the 11th Plan Period.

B. Capacity Addition proposed during 12th Five Year Plan (2012-17)

1.15 A hydro capacity addition target of 10,897 MW (6,004 MW in Central Sector 1,608 MW in State Sector and 3,285 MW in Private Sector) has been set for 12th Plan. Out of this target, hydro projects with aggregate installed capacity of 798 MW (527 MW in Central Sector, 102 MW in State Sector & 169 MW in Private Sector) has already been commissioned in 01.10.2013.

C. Policy Initiatives taken for increasing the Hydro Capacity

1.16 The main features of the Government of India policy on hydro power development are as follows:

- GOI opened the sector to private participation in 1991 and allowed 16% return on equity in 1992.
- Basin-wise development of hydro potential – comprehensive Ranking studies for 399 schemes in October 2001.
- Streamlining of clearance process and introduction of three-stage clearance approach for development of hydro projects in Central Sector.
- 50,000 MW hydro-electric initiative launched by Hon'ble prime Minister of India in May 2003. Under the initiative, CEA got prepared Pre-Feasibility Reports (PFRs) of 162 hydroelectric projects located in 16 States with total installation of 47,930 MW capacity.
- GOI brought out National Rehabilitation & Resettlement Policy 2007 (NRRP-2007). NRRP-2007 provides core provisions to ensure adequate rehabilitation package beyond monetary compensation through active and transparent participation of PAPs.
- Notification of Electricity Act 2003, National Electricity Policy 2005 and Tariff Policy 2006.
- Hydro Policy 2008.
- 15.5 Rate of Return on equity for ROR Schemes & 16.5% for ROR schemes with Podage & Storage schemes. Additional 0.5% ROE also allowed for timely completion of projects.

1.17 Explaining it further, the Power Secretary stated during evidence:

"The Central electricity Authority has estimated the total capacity of the hydel power projects across the country to be about 1,45,000 MW. The important point is that 6600 MW capacity out of the about is just the North-Eastern Region. This too is mostly in Arunachal Pradesh, Out of this, 1,45,000 MW about 40,000 MW is in use, work is going on for generation of around 13000 MW power and the remaining 60,000 MW capacity is under nearly 175 projects which are under process at various levels such as survey, investigation, clearances etc. In this manner, around 78 % of the total capacity of hydel power projects has been either fully developed or is under process. The Government has taken a number of steps including policy decisions to promote hydel power projects during the past few years. Decisions have been taken to relocate the displaced villages and families. Hydel Power projects have been provided 'cost plus' basis facility so that anyone involved in any development in the project does not have to bear any loss i.e. he gets a higher return than the cost incurred. Similarly, a mechanism has been formulated at the level of the Ministry, the Hon'ble Minister, and the Central Electricity Authority for monitoring the implementation of projects and regular meetings are

held. The projects are monitored to ensure their rapid progress. But problems still come up and we make regular efforts to find-out ways to take up more and more hydel power projects. These projects generate cost effective power. This is an important issue we have to consider how to enhance the total installed capacity in the country. It is particularly important for the North-Eastern region for the Ministry pertaining to the North-Eastern States, also called the Doner, to come forward as a number of infrastructural developments such as roads are also required for the development of project."

1.18 On a query regarding indication of timeline for completion of a project categorized under various stages of development, the Ministry in a reply stated:

"No firm timeline may be indicated for the projects categorized under various stages of development because it will depend upon the time taken by the developers for Survey & Investigation, preparation of DPR and obtaining various statutory clearances like concurrence from CEA/ techno-economic clearance from State Govts. for project costing upto Rs. 500 crores, environment and forest clearance from MoEF etc".

1.19 Regarding the number of Hydro Electric Projects having concurrence by the Central Electricity Authority (CEA) but have been taken up for construction since 2002-03, the Ministry furnished a list of such projects which are 36 in numbers having a capacity of 20,873 MW as detailed in the Annexure-I.

1.20 On being asked the normative time to start the construction work after the clearance of CEA, the Ministry informed in a note:

"Detailed Project Reports of 36 nos. hydro electric projects with an aggregate installed capacity of 20873 MW have been cleared by CEA which are yet to be taken up for construction. Normally, the construction work of a hydro electric project may start in year after clearance by CEA. This time is utilized for tying up of funds (CCEA approval in case of Central Sector projects), finalizing contractors, awarding of works, obtaining other statutory clearances, like from MOEF, MHA (if applicable), Ministry of Defence (if applicable), State Govt. etc. and completing infrastructure works

like, roads, bridges etc. Though, it may vary to some extent depending upon the size/ quantum of work involved. Actual start of construction works may get affected in case there is delay in any of above.

Majority of the projects cleared by CEA could not be taken up for construction due to delay in receiving the clearances from environment and forest angle.

The projects cleared by CEA would be taken up for construction after receiving the statutory clearances like, environment and forest, tying up of funds and award of works".

1.21 On being enquired about the steps taken to expedite construction of the projects which are already cleared by CEA, the Ministry in a reply stated:

" Subsequent to accord of concurrence by CEA, the hydro electric projects can be taken up for construction after receiving the statutory clearances like, environment and forest, tying up of funds, signing up of PPAs and award of works.

To achieve above, project authorities are required to take simultaneous action for obtaining clearance from environment and forest angle and tying-up of funds. As soon as the statutory clearances are obtained, funds are tied up and PPAs are signed, the process of award of works for construction is initiated by the developer. Moreover, MOP has taken up the pending EF/FC in respect of these projects with MoEF".

1.22 Details of hydro electric projects under examination in CEA/ CWC/ GSI and their present status is given at **Annexure-II**.

1.23 When asked about the status of 11836 MW capacity of hydro electric projects which are under examination, the Ministry in a reply stated:

"Detailed Project Reports (DPRs) of 23 nos. hydro electric projects with an aggregate installed capacity of 11836 MW are under examination in CEA/ CWC/ GSI. Examination procedure is briefly described below :

In view of demarcation of responsibilities in Govt. of India and as per provisions in Electricity Act, 2003, CEA consults/ takes assistance of

Central Water Commission for examination of DPRs in respect of aspects related to hydrology, dam/ barrage design, gates design, hydel civil design, foundation engg. & seismicity, construction machinery and civil cost. CEA also takes assistance of Geological Survey of India for examining the aspects related to geology of area, where different components of the project are located. Adequacy and suitability of construction material is examined by Central Soil and Material Research Station. Aspects related to international water issues are examined by Ministry of Water resources. Aspects in respect of pondage provision, power potential, E&M design, power evacuation, E&M cost, quantities of civil works, phasing of expenditure, IDC & FC and tariff are examined in different Divisions of CEA itself.

After all the aspects are examined by respective formations in CEA/ CWC/ GSI, Central Electricity Authority accords concurrence to the scheme u/s 8 of Electricity Act, 2003 in a concurrence meeting represented by all the appraising organizations and the developer.

Though, CEA endeavors to accord concurrence within a period of 90 working days, as far as practicable, provided the Detailed Project Report submitted to it, is complete in all respects including geotechnical investigations, project layout, structural designs, safety aspects etc. and is as per existing standards, codal procedure and guidelines. However, due to incomplete/ sketchy DPRs and time taken by the project proponents in responding to the queries of the appraising groups, many a times it is not possible to adhere to. Inadequate manpower in the appraising organizations also add to the time taken.

1.24 On being asked about the normative time taken for grant of clearance by CEA and the reasons for taking more time for clearance by CEA for some projects, the Ministry in a note stated:

"As far as practicable, CEA endeavors to accord concurrence within a period of 90 working days provided the Detailed Project Report submitted to it, is complete in all respects including geotechnical investigations, project layout, structural designs, safety aspects etc. and is as per pre-laid standards, codal procedure and guidelines.

Out of above 28 nos. of hydro electric schemes, 18 nos. of Hydro electric schemes with an aggregate installed capacity of 12948 MW have already delayed for according concurrence by CEA.

The main reasons for delay in according concurrence by CEA are listed below:

- (a) DPRs are not prepared as per CEA, CWC and GSI Guidelines and codal procedures.
- (b) Many of the private developers are new in hydro sector are without any experience and DPRs submitted to CEA are of very poor quality.
- (c) Private developers normally submit the sketchy and incomplete DPRs to meet the time-line of submission of DPRs as stipulated by State Governments.
- (d) DPRs are prepared based on inadequate geological investigations. Required number of drill holes and drifts made are not of adequate numbers or not of proper size. Requisite rock mechanic tests are not done etc.
- (e) Locations of dam/ barrage, PH are not selected properly and got revised during appraisal process.
- (f) Some times type of dam is changed during appraisal process and require resubmission of revised DPRs.
- (g) Various alternatives for layout of water conductor system not explored and selected layout is improper.
- (h) In some cases, there are changes in power potential/ installed capacity of the project due to enhanced environmental flows stipulations, requirement of cumulative basin EIA studies as required by MOEF.
- (i) In some cases, the design improvements are done by CEA/ CWC. This may also result in revision of DPRs.
- (j) In some cases, parameters of schemes need to be changed as per the decisions of Standing Technical Committee of Conversion of Storage scheme to ROR/ reduction in storage.
- (k) In some cases, Model Tests are required to be carried out by the developer as per suggestions of CWC. It may take from 60-90 working days. Also there are very limited organisations for carrying such model tests.
- (l) Delay in complying comments of appraising groups by developers.
- (m) Appraisal process involves a large number of appraising groups (20 nos.) appraising about 35 aspects (14 by CEA, 15 by CWC, 1 by MOWR, 1 by CSMRS, 1 by GSI and 3 by State Govt.). After receiving requisite approvals from these agencies, CEA accords concurrence in a meeting attended by all appraising groups, project developer and

representatives from State Govt., Planning Commission, MOEF and MOP.

- (n) Many of the clearances are inter-dependent. Delay in one clearance causes delay other consequent clearances.
- (o) At present 28 DPRs are under examination in CEA/CWC/GSI (including 5 from neighbouring countries) and 13 more DPRs are likely to come in near future for which power potential chapters have been cleared by CEA.
- (p) Technical manpower in appraising formations in CEA and CWC is depleting day by day.

1.25 On the same issue, during the evidence, the Secretary, Ministry of Power stated:

“The delay taking place in hydro water projects is due to three or four reasons which we have to address. One reason is the time being taken in clearance to be given by CEA. That time is being taken because several agencies are involved in this task. Apart from CEA, Central Water Commission as well as other agencies are involved. Though I have taken charge just now but one thing we should do regarding which I have already passed directions also is to make a provision to minimize the time period of getting clearance by CEA which is taking two to three years right now. We have given suggestion as to how it will be addressed. Right now, the existing provision regarding the project report is to send the same to all the agencies involved and after getting their inputs, a meeting is held in which the discussion takes place. It takes a lot of time. We are considering the possibility of constituting such an empowered Committee which can represent various agencies and have sittings from time to time and can clear the project after taking inputs from all concerned in the meeting itself. We are proposing to make this provision. After taking charge, I have already made a suggestion to implement it and fix a time period within which either shortcomings in the project should be brought fourth or the project should be cleared. The second reason is the long time taken in giving the environment related clearance and this is because most of the hydro power projects are to be implemented in such areas which are delicate from the environment point of view. The procedures involved in the Ministry of Environment and Forests are such which take a lot of time. We have to minimize that also. Our Hon'ble Minister has made an effort in this regard and constituted a Committee of senior officers which sits for discussion every week and the result is also visible in the sense that there is a spurt in clearing the projects now within an short period of time.

Thirdly, the construction of hydro projects also take time. Obviously, it will take some more time than a thermal projects. But this is a

technological issue. We have to see it from technical point of view that it normally takes more time than a thermal project because longer period of time is taken in constructing dams and reservoirs. We can make efforts to reduce this time taken also. But mainly we have to work towards reducing the time taken in clearance by CEA as well as the environment related clearance."

1.26 On a query for possible reduction of time taken by CEA in grant of clearance, the Ministry in a note stated:

"The time taken by CEA in according concurrence can be reduced by resorting to following measures:

a) The project developer should ensure preparation of a sound and bankable detailed project report of a hydroelectric project which is a pre-requisite for according timely concurrence by CEA. Detailed project report need to be prepared based on geographical, geological, topographical and hydrological surveys & investigations carried out at proposed site of the project as per standards/ codal procedures/ guidelines which demand sincerity and a fair degree of accuracy in carrying out the field investigations.

b) Technical appraisal of DPRs can also be expedited, if DPRs are accepted for technical examination only if the following studies/ clearances have been finalized before submission of DPRs:

- (i) Hydrological studies from CWC
- (ii) Power potential studies from CEA
- (iii) Geological investigations from GSI
- (iv) Location of main components of the project and project layout from CEA/ CWC.

c) Strengthening of appraising groups in CEA, CWC and GSI by adequately posting experienced personnel would also reduce time taken for the concurrence to hydro electric projects".

1.27 The Hydro Electric Schemes returned to project authorities since 2002-03 onwards as furnished by the Ministry are given at **Annexur-III**.

1.28 The Committee pointed out that 9590 MW capacity of hydro projects have been returned to project authorities and enquired about the reasons for returning the projects and the action taken to sort out the issues, the Ministry in a reply stated:

"Detailed Project Reports (DPRs) of 28 nos. hydro electric projects with an aggregate installed capacity of 9590 MW were examined by the concerned Directorates/ Divisions of CWC, CEA, GSI and CSMRS and after discussion in a joint meeting represented by the appraising organizations are returned to project authorities for resubmission after tying up of all the requisite inputs as observed by CEA/ CWC/ GSI/ CSMRS.

Generally, the DPRs are returned in the cases where the required geological and geotechnical investigations have not been done, requisite hydrological data is not available and other investigations which have bearing on selection on type of project and its components. The projects returned to the project authorities were scrutinized/ examined by the respective appraising groups and after establishing that the DPRs are not good enough (do not contain the requisite information/ data) for taking up for detailed examination, the DPRs were returned to project authorities for resubmission after tying up of all the requisite inputs as observed by CEA/ CWC/ GSI/ CSMRS.

Normally, the small issues are sorted out in joint meeting between the appraising groups and the project authorities. However, the DPRs are returned in cases where the required investigations are not complete/ carried out or the proposed project layout/ designs seem to be infeasible and the issues could not be sorted out across the table/ in joint meetings and which would take longer time to resolve.

1.29 On a query regarding the practice of returning the DPR by CEA the Ministry in a reply stated:

"Preparation of a sound and bankable detailed project report of a hydroelectric project is a pre-requisite for according timely concurrence by CEA. Detailed project report is prepared based on geographical, geological, topographical and hydrological surveys & investigations carried out at proposed site of the project which demands sincerity and a fair degree of accuracy in carrying out the field investigations.

The projects returned to the project authorities were scrutinized/ examined by the respective appraising groups and after establishing that the DPRs do not contain the requisite information/ data for taking up for

detailed examination. The DPRs were returned to project authorities for resubmission after tying up of all the requisite inputs as observed by CEA/ CWC/ GSI in their comments.

1.30 It has been informed that hydroelectric scheme with installed capacity of 18,564 MW are under Survey & Investigation. The state-wise details of these schemes and their status as furnished by the Ministry are given below:

Region/State		Total	
		No	MW
NORTHERN REGION			
Jammu & Kashmir			280
Himachal Pradesh	12		2015
Punjab			
Haryana			
Rajasthan			
Uttarakhand	3		552
Uttar Pradesh			
Total (Northern Region)	16		2847
WESTERN REGION			
Madhya Pradesh			
Chhatisharh			
Gujarat			
Maharashtra			
Goa			
Total (Western Region)	0		0
SOUTHERN REGION			
Andhra Pradesh	1		280
Kerala	2		130
Karnataka			
Tamilnadu			
Total (Southern Region)	3		410
EASTERN REGION			
Sikkim	3		432
West Bengal	5		416
Orissa			
Bihar			
Jharkhand			
Total (Eastern Region)	8		848
NORTH EASTERN REGION			
Arunachal Pradesh	42		12539
Mizoram			

Manipur		4	246
Tripura			
Meghalaya		11	1526
Nagaland			
Assam		3	148
Total (N.E.R.)		60	14459
TOTAL ALL INDIA		87	18564

V. PLAN-WISE GROWTH OF HYDRO POWER

1.31 The following table shows the Plan-wise growth of hydro power (Capacity Addition) as under:

Plan Period	Hydro Capacity Addition during the Plan (MW)	Installed Capacity at the end of Plan (MW)		
		Hydro Installed Capacity	Total Installed Capacity including other R.E.S.	Hydro Power share as % of total Installed Capacity
1st Plan (1951-56)	380.19	1061.44	2886.14	36.78
2nd Plan (1956-61)	977.18	1916.66	4653.05	41.19
3rd Plan (1961-66)	2207.08	4123.74	9027.02	45.68
3rd annual Plan (1966-69)	1783.17	5906.91	12957.27	45.58
4 th Plan (1969-74)	1058.39	6965.3	16663.56	41.80
5 th Plan (1974-79)	3867.77	10833.07	26680.06	40.60
Annual Plans (1979-80)	550.90	11383.97	28447.83	40.01
6 th Plan (1980-85)	3076.05	14460.02	42584.72	33.96
7 th Plan (1985-90)	3828.41	18307.63	63636.34	28.77
2 Annual Plans (1990-92)	881.50	19194.62	69065.39	27.79
8 th Plan (1992-97)	2427.65	21644.8	85019.31	25.46
9 th Plan (1997-02)	4538.25	26261.23	103410.04	25.40
10 th Plan (2002-07)	7886.00	34653.77	132329.21	26.19
11 th Plan (2007-12)	5544.00	38990.40	199877.03	19.51
12 th Plan (2012-17) (as on 31.08.2013)	633.00	39623.40	227356.73	17.42

* Does not include hydro projects having capacity upto 25MW

1.32 The targets for 12th Plan as stated by the Ministry are as under:

(Figures in MW)

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
A. Commissioned						
Central Sector	374	33	-	-	-	407
State Sector	57	0	-	-	-	57
Private Sector	70	99	-	-	-	169

Sub-total 'A' Comnd.	501	132	-	-	-	633
B. Under Execution						
Central Sector	-	881	1406	520	2790	5597
State Sector	-	85	686	270	510	1551
Private Sector	-	100	2222	794	-	3116
Sub-total 'B' Comnd.	-	1066	4314	1584	3300	10264
Total 'A'+ 'B' (MW)	501	1198	4314	1584	3300	10897

1.33 The Hydro Electric Projects for benefits during 2013-14 as furnished by the Ministry is given under:

Particulars	Implementing Agency	State	Benefits (MW)
Central Sector			914
Teesta Low Dam-III, 4X60 MW	NHPC	W.B.	33*
Uri-II, 4X33 MW	NHPC	J&K	240
Parbati-III, 4X130	NHPC	H.P.	390
Nimoo Bazgo, 3X15 MW	NHPC	J&K	45
Rampur, 6X68.67	SJVNL	H.P.	206
State Sector			85
Lower Jurala, 6X40 MW	APGENCO	A.P.	40
Bhawani Kattlai-II, 2X15 MW	TANGEDCO	T.N.	30
Bhawani Kattlai-III, 2X15 MW	TANGEDCO	T.N.	15
Private Sector			199
Sorang, 2X50 MW	Himachal Sorang	H.P.	100
Chujachen, 2X49.5 MW	GATI	Sikkim	99*
	Total 2013-14		1198
*Commissioned			

VI. PUMPED STORAGE SCHEME

1.34 According to the Ministry, the identified hydropower capacity potential under Pumped Storage scheme in the country (as on 31st May, 2013) is 96,524 MW, out of which 4,785 MW is under operation and 1,080 MW capacity is under construction.

1.35 On being asked about the reasons for very low installed capacity of hydropower under Pumped Storage scheme, the Ministry in a reply stated:

"As seen from the status of Hydro Potential Development in the country about 75% of the conventional hydro potential is yet to be developed. It is a general practice to develop conventional Hydro Projects on priority and subsequently develop pumped storage schemes to provide system reliability etc. when surplus/economical off peak power is available.

1.36 On a query regarding the demand of electricity generation from pumped storage scheme, the Committee are informed as under:

"The electricity produced by pumped storage schemes may be used during Peak hour. During off-peak time, the water is pumped from the lower reservoir of pumped storage project to upper reservoir and during peak hour, electricity is generated.

The electricity generation from pumped storage schemes depends on the availability of off-peak power and its tariff".

1.37 However, the Government has not replied the specific question of the Committee whether the electricity generated under Pumped Storage Scheme is economically competitive and viable vis-à-vis the electricity generated from Hydro Power Plants.

VII. HYDRO POLICY

1.38 The Government has notified a Hydro Power policy, 2008 on 31.03.2008 to encourage private sector participation in hydro sector. The salient features of the policy as furnished by the Ministry are given below:

- The cost plus Tariff regime (in which tariff is to be determined by the regulator under section 62 of Electricity Act, 2003) has been extended for public as well as private sector hydro power projects up to December 2015.
- Transparent selection criteria for awarding sites to private developers.
- Enables developer to recover his additional costs through merchant sale of upto a maximum of 40% of the saleable energy. 5% reduction for a delay of every six months. – Balance long term PPAs

- For 10 years from the COD, developer to provide 100 units of electricity per month to each PAF - in cash or kind or a combination of both.
- Project developer assists in implementing rural electrification in the vicinity of the project area and contributes the 10% share of the State Govt. under the RGGVY scheme.
- Additional 1% free power from the project for a Local Area Development Fund, - regular revenue stream for welfare schemes, creation of additional infrastructure and common facilities.
- The State Governments are also expected to contribute a matching 1% from their share of 12% free power.

1.39 The Ministry of Power, Government of India is primarily responsible for the development of electrical energy in the country. MOP is entrusted with the responsibility of perspective planning, policy formulation, processing of projects for investment decision, monitoring of the implementation of power projects and enactment of legislation in regard to thermal & hydro power generation, transmission and distribution. In order to promote hydro sector, a new policy on hydro power development was announced (August 1998) with the aim and objective of accelerating pace of hydro development. The Hydro Policy emphasized on the following:

- Basin wise development of hydro potential for optimal use of river basins;
- Execution of mega projects with an installed capacity of 500 MW and above through Central Public Sector Undertakings in case State or private sector is not in a position to implement these projects;
- Encouragement to private investment through joint ventures or independent power producers;
- Through survey and investigation of the potential hydro sites on an advanced scientific basis before preparation of Detailed Project Report (DPRs);
- Simplification of procedure for clearances to save time, money and reduce gestation period;
- Development of small and mini hydro projects; and
- Allotment of hydro projects upto 100 MW to the private developers through MoU route.

1.40 With an objective to achieve the goal of power to all by the year 2012, Hydro Power Policy 2008 set the following broad policy objectives for accelerating the pace of hydro power development:

- Inducing private investment in hydro power development;
- Harnessing the balance hydro-electric potential;
- Improving resettlement and rehabilitation;
- Facilitating financial viability of hydro projects; and
- State Governments to follow a transparent procedure for awarding potential sites to the private sector.

1.41 On being asked about the need for revision/amendment of the policy so as to give thrust to hydro sector, the Committee were informed:

"Policy steps taken in the Hydro Power Policy are expected to give boost to hydro power development in the country. However, these steps take some time to show the desired results. Based on the feedback from various developers, provisions of Policy are reviewed and modification, as necessary are done from time to time by the concerned Ministries/ Departments.

VIII. PRIVATE SECTOR PARTICIPATION

1.42 The Committee have been informed that out of developed capacity of 39,788 MW of Hydro Power the share of private sector is only 2694 MW which is only 7% of the total developed hydro power. Regarding involvement of private sector in the development of hydro power sector, the Ministry in a note stated:

"To bring in additional resources for the capacity addition in the power sector, a policy to encourage greater participation by private entrepreneurs of India and abroad in electric power generation was announced to enhance the chances of private investment in the year 1991.

A hydro policy was also announced in Aug' 1998 on hydro power development incorporating several steps and measures. Further, Govt. has notified a Hydro Power policy, 2008 on 31.03.2008 to

encourage private sector participation in hydro sector. The salient features of the policy are given below:

- The cost plus Tariff regime (in which tariff is to be determined by the regulator under section 62 of Electricity Act, 2003) has been extended for public as well as private sector hydro power projects up to December 2015.
- Transparent selection criteria for awarding sites to private developers.
- Enables developer to recover his additional costs through merchant sale of upto a maximum of 40% of the saleable energy. 5% reduction for a delay of every six months. – Balance long term PPAs
- For 10 years from the COD, developer to provide 100 units of electricity per month to each PAF - in cash or kind or a combination of both.
- Project developer assists in implementing rural electrification in the vicinity of the project area and contributes the 10% share of the State Govt. under the RGGVY scheme.
- Additional 1% free power from the project for a Local Area Development Fund, - regular revenue stream for welfare schemes, creation of additional infrastructure and common facilities.
- The State Governments are also expected to contribute a matching 1% from their share of 12% free power".

1.43 When the Committee desired to know as to how the policy since its notification has helped in development of hydro power sector viz. increase in installed capacity, allotment of new projects etc, the Ministry in a reply stated:

"In Hydro Power Policy, 2008, policy measures have been taken to boost the development of hydro power sector through private sector participation. A number of hydro projects have since been allotted by State Govt. to private sector which are at different stages of development as given below:

S. No.	Status of Private Sector Projects	Nos.	MW
1.	Projects Under Operation	13	2728
2.	Projects Under Execution	18	3640
3.	Projects concurred by CEA and yet to be taken up for construction	17	12144
4.	Projects under examination in CEA	12	5885
5.	Projects returned to Project authorities for resubmission	15	4462

6.	Projects under Survey & Investigation	64	17529.50
	Total	139	46388.5

1.44 On a query as to how the participation of the private players in hydro power sector be increased without compromising the due share of CPSUs, the Ministry in a reply stated:

"Water and Water Power is state subject. States are allocating hydro projects to CPSUs, Private developers and State Govt. Undertaking for development. During 12th plan a Hydro capacity addition of 10,897 MW (6,004 MW in Central Sector 1,608 MW in State Sector and 3,285 MW in Private Sector) is programmed. It would thus be seen that CPSUs continue to play major role in hydro power development".

IX. CONSTRAINTS IN THE DEVELOPMENT OF HYDRO POWER

1.45 When asked about the constraints faced by the Ministry with regard to development of hydro capacity in the country, the Ministry stated:

"The hydro capacity is taken under construction once various statutory clearances are obtained and major works awarded. Due to long gestation period and challenges in construction of hydro plants, the capacity addition of hydro power had declined. The major reasons for time overrun and challenges in construction of hydro power development are as under:-

Land Acquisition

Problem: Land acquisition is a persistent issue involved in the implementation of hydro projects. Acquisition of land for various locations of the project such as Dam, HRT, Power House, Switch yard etc. delay the commencement / progress of works.e.g. Koteshwar, Parbati-III HEPs

Environment and Forest issues

Problem: Three types of clearances are mandatory from 3 different wings of MoEF i.e. Environmental clearance from EAC, Forest Clearances from FAC & Wildlife Clearances from NBWL.

This makes the whole process very cumbersome which otherwise would be easier and less time consuming.

Rehabilitation & Resettlement

Problem: Dislocation of the people from their houses/fields/workplaces etc. and their resettlement is a sensitive issue and involves a lot of time and money. Many times this issue leads to court cases resulting in delay in project execution/completion. e.g. Koteshwar, Maheshwar HEPs

Natural Calamities

Problem: Natural calamities like unprecedented rain / flash floods, cloud burst, earthquake etc delay the completion of project. e.g. Uri-II, Teesta-III HEPs

Law & Order Problem & Local issues

Problem: Protest by the local people against the construction activities, like blasting, muck disposal, etc. and also for various demands like employment, extra compensation, etc. often create law and order problems and delays the completion of works. e.g. Uri-II, Subansiri, TLDP-III & IV HEPs. In case of Subansiri HEP in Arunachal Pradesh / Assam the MoU with the State Government of Assam is yet to be signed. Also there is issue of downstream impact from this project.

Contractual problems

Problem: Due to various reasons like variation in quantities on account of geological uncertainties, changes in design/scope of work, price rise, etc. contractual issues come in the way of completion of the projects and projects get delayed. e.g. Parbati-II, Kameng HEPs.

Change in Design

Problem: Many projects in Himalayan regions are affected by poor geology & other unforeseen site conditions entailing change in design or change in construction methodology which delays the completion of project and also sometimes leads to contractual disputes resulting in delay in completion of hydro projects. E.g. Kameng, Subansiri HEPs

Geological Surprises, Difficult Terrain & Poor Accessibility

Problem: A large number of HE projects has been delayed due to geological surprises. Difficult terrain & poor accessibility of the

hydro project site takes lot of time & money to develop / maintain the infrastructures like road, establishments, etc. causing the delay in completion of hydro projects.

1.46 In addition to constraints mentioned above, the Committee in its 28th Report on Demands for Grants of the Ministry of Power for the year 2012-13 have dealt with the issue wherein the Survey and Investigation have been entrusted to Central PSUs and after completion of this important elementary work the projects have been handed over to Private Developers. The projects so handed over are held up without concrete progress. The issue of upfront premium has also impacted the progress of the plants on anticipated lines.

1.47 On a query regarding the efforts of the Government to make hydro power sector attractive considering its inherent strengths and weaknesses such as longer gestation period and large land area requirements, etc, the Ministry in a note stated:

"The Government has taken several policy initiatives/other measures to make hydro power sector attractive and to boost hydro development in country. Detail policy measures are given below:

A. National Electricity Policy:

The policy lays maximum emphasis on full development of the feasible hydro potential in the country which will facilitate economical development of States, particularly North Eastern States, Uttarakhand, Himachal Pradesh and Jammu & Kashmir. Since the hydel projects call for comparatively larger capital investment, debt financing of longer tenure has been recommended. The State Governments have been advised to review procedure for land acquisition and other approvals / clearances for speedy implementation of hydro projects. Full support of Central Government has been extended for hydel development by offering the services of CPSUs like NHPC, NEEPCO, SJVNL, THDC etc.

B. Hydro Power Policy- 2008: Salient Features (including subsequent changes)

Hydro Power Policy, 2008 has been notified by Govt. of India on 31.3.2008. The salient features of the policy are given below:

- The cost plus Tariff regime (in which tariff is to be determined by the regulator under section 62 of Electricity Act, 2003) has been extended for public as well as private sector hydro power projects up to December 2015.
- Transparent selection criteria for awarding sites to private developers.
- Enables developer to recover his additional costs through merchant sale of upto a maximum of 40% of the saleable energy. 5% reduction for a delay of every six months. – Balance long term PPAs
- For 10 years from the COD, developer to provide 100 units of electricity per month to each PAF - in cash or kind or a combination of both.
- Project developer assists in implementing rural electrification in the vicinity of the project area and contributes the 10% share of the State Govt. under the RGGVY scheme.
- Additional 1% free power from the project for a Local Area Development Fund, - regular revenue stream for welfare schemes, creation of additional infrastructure and common facilities.
- The State Governments are also expected to contribute a matching 1% from their share of 12% free power.

C. National Rehabilitation & Resettlement Policies:

National Rehabilitation & Resettlement Policy 2007 addresses the need to provide succor to the asset less rural poor, support the rehabilitation efforts of the resource poor sections, namely small and marginal farmers, SCs/STs and women who have been displaced. Besides, it seeks to provide a broad canvas for an effective dialogue between the Project Affected Families and the Administration for Resettlement & Rehabilitation to enable timely completion of project with a sense of definiteness as regards costs and adequate attention to the needs of the displaced persons. The rehabilitation grants and other monetary benefits proposed in the Policy are minimum and applicable to all

project affected families. States where R&R package are higher than proposed in the Policy are free to adopt their own package. The objectives of the Policy are to minimize displacement, to plan the R&R of PAFs including special needs of Tribals and vulnerable sections, to provide better standard of living to PAFs and to facilitate harmonious relationship between the Requiring Body and PAFs through mutual cooperation.

A new Land Acquisition, Rehabilitation and Resettlement Bill, 2011 by Ministry of Rural Development which will have more participation of local people in terms of Land acquisition and Rehabilitation & Resettlement is under consideration".

1.48 In addition, the following steps may help in overcoming the problems of development of hydro sector projects.

- i) Timely completion of Survey & Investigation works, preparation of DPRs and their time bound clearances from various organisations.
- ii) proper and smooth road connectivity, reliable communication infrastructure and effective coordination with various agencies like Border Road Organisation, State PWD, State Police, Ministry of Road and Highways etc.
- iii) Development of useful waterways which are helpful in developing hydro power projects.
- iv) Easy access to construction material near and around the site of Hydro Power Projects.
- v) Farsighted leadership in resolving various local issues in coordination with the State Government and other concerned agencies/persons.
- vi) Adequate security measures to safeguard personnel and machinery deployed for the implementation of various projects without time and cost overrun.

X. IMPACT OF FLASH FLOOD

1.49 On being asked about the assessment made with regard to the damages done to the hydro power plants in the Utrakhand, the Ministry in a detailed note replied as under:

As per reports received from project authorities the damage to the hydro-electric projects which are **under construction** in Uttarakhand is as under:-

1. **Tapovan Vishnugad HPP (4X130 MW)** :- The project is being developed by M/s NTPC Ltd. in District Chamoli of Uttarakhand.

Physical Damages:-

a) **Barrage & De-Silting Basin Package:** Both u/s and d/s diversion dykes were washed away on 17.06.2013 along with u/s cofferdam which was under construction. Barrage excavated area and river diversion channel has got filled with slush and large size boulders. Approach road to Silt Flushing Tunnel (SFT) damaged at several locations.

b) **Penstock & Powerhouse Package:** Flooding of Power House machine hall up to EL 1275 m through TRT. TRT got filled with slush and around 150m TRT approach road got washed away.

2. **Lata Tapovan HPP (3X57 MW)**:- The project is being developed by M/s NTPC Ltd. in the District Chamoli of Uttarakhand.

The damages as reported by Project Authorities are as below:

Physical Damages:

a) The 20m span temporary bridge under construction near Power House site got washed away.

b) Almost total length (approx. 1030m length) of approach road up to bridge for reaching Power House site at left bank has got damaged.

c) Approach road to Surge Shaft, which was under construction on right bank has also got damaged.

3. **Tehri HPP (4X250 MW) & Koteshwar HEP (4X100 MW)**:- The projects have been constructed by M/s THDC Ltd. on Bhagirathi River in the District Tehri Garhwal of Uttarakhand and are under operation.

No effect on any civil structure & HM/EM Equipments has been reported.

4. **Tehri PSP (4X250 MW)**:- The Tehri PSP Project is an integral part of Tehri Complex which consists of Tehri HPP and Koteshwar HEP. The project has been constructed by M/s THDC

Ltd. on Bhagirathi River in the District Tehri Garhwal of Uttarakhand.

No effect on any civil structure & HM/EM Equipments.

5. Singoli Bhatwari HEP (99 MW) :- The project is being constructed by L&T Uttaranchal Hydropower Limited in the District Rudraprayag of Uttarakhand
The damages as reported by the Project Authorities are as below:

All the roads from Rishikesh to Gaurikund were reportedly damaged heavily.

Access & Approach to Project Site

All the access roads from Rishikesh to project site were damaged in flood.

Infrastructure

Offices, site stores and workmen camp at Barrage, Adit 1, Adit 5 and Power House were washed away/buried under flood material.

Plant & Machinery

One no, Batching Plant, one no. Cement Silos, a few concrete pumps, D.G. sets, drill jumbos, dewatering pumps, cranes, excavators, welding rectifiers etc. were washed away.

Barrage, Intake, Power House and Associated Structures

Coffer dams were washed away in the flood. Power House pit got filled with debris and boulders. Protection works along the river washed away.

EM Works

EM store washed away along with the equipment supplied.

HM Works

Pressure shaft fabrication workshop was damaged and material (plates, manufactured ferules etc.) either washed away or buried under River Bed Material.

6. Phata Byung Hydroelectric Project (76 MW) :- The project is being constructed by M/s LANCO in the District Rudraprayag of Uttarakhand.

The damages as reported by the Project Developer are as below:

Substantial damages and losses have occurred to the project components which are as follows:

- a) Damages to Dam structure and filling of Debris in the Reservoir area
- b) Damages to Diversion Tunnel and its Inlet Structure, & Intake tunnels, De-silting Arrangement, Feeder Tunnel, etc.
- c) Approach Road to various components has been damaged.
- d) Approach Road connecting Dam site both U/s & D/S has been washed Crusher and Batching Plant at Dam site washed away.
- e) Crusher Plant at PH site washed away.
- f) Machineries like Tippers, DG Sets, etc. were also lost.

As per information received from NHPC Limited, Jaiprakash Power Ventures Limited and UJVNL, a note on damages done to the Hydro Power Plants in Uttarakhand is given below:

A) Dhauliganga Power Station-280 MW (NHPC Ltd.)

Due to cloudbursts/ heavy unprecedented rainfall in the upstream reaches of Dharchula area of Pithoragarh District and consequently high flood in the rivers/ nallas during 16th - 17th June 2013, Dhauliganga Power Station has suffered immense damage to various assets including Power House, Dam, Residential Colony/Offices at Tapovan, Central Store at Dobat and other facilities of the power station. The approach road from Pithoragarh to Dharchula and to various sites of power station e.g Power House and Dam has been damaged at several places including one bridge at Elagad Nallah which connects the power house and damages/undermining of Kulagad Bridge, which is also enroute to power house. All the sites have been cut-off and there is no movement of vehicles and communication.

The devastating flood that occurred in this region created havoc in Dhauliganga Power Station and it causes the immense damages to the power station; brief details of damages are summarized as under:-

1. Power House has suffered heavy damages due to unpreceded discharge in the Elagad nallah flowing adjacent to power house and discharging in to Kali River. Bridge on the Elagad nallah enroute to power house has been washed away and road from Tapovan office to power house has also severely damaged at the number of places. Due to very high discharge in the Elagad Nallah and Kali River, water entered the power house through TRT which causes submergence of

complete power house. Extent of damages inside the power house is not yet known, as still the flood water inside the power house is up to just below the service bay. However, as per initial assessment the E&M equipments inside power house will need repair/replacement after the damages.

Further, due to heavy flood in Elagad Nallah, the TRT outlet has got completely buried under the huge amount of sediments carried in the Elagad Nallah during the heavy flood. The main access road leading to the power house from the state highway has been washed away in a length of about 40 m. Further ahead, the access road near MAT and TRT Outlet has got undermined and perched precariously. The Store shed meant for storing the materials for power house and the materials kept inside has been washed away. Other buildings at the power house area like CISF check post, canteen, quality control room has also been washed out in the flood.

2. Tapovan Colony of the power station has suffered huge damages where entire colony had to be vacated during the night. Eight (08) blocks of the colony (48 Quarters) and field hostel has got washed away. A portion of the community centre has also washed out. The interior roads of the colony have been damaged/ washed away. The tin shed building of workshop and badminton hall has got flooded and huge silt deposited there. The protection work done alongside the river for protection of the Tapovan colony and offices has been completely washed out. The remaining colony is also in danger, as the erosion by the river is being increasing day by day.

3. Central Stores of the power station at Dobat has also suffered intensive damages. Two Stores buildings (tin sheds) has washed out. Only few of the materials kept in the store sheds could be retrieved. One of the 20 KL tank of the petrol pump of the power station located at Dobat has also washed away. The township for CISF at Dobat is also in danger, as the earth below the foundation of the township building has been eroded.

4. The approach road to the dam site is also damaged at many places. The damages at dam site are being accessed.

5. Power Supply to the colonies and offices power house and dam site is totally disrupted due to damages of 11 KV network at several places.

6. Communication system at Tapovan office, Dobat, Power house etc. is totally disrupted as the OFC line has

been damaged at many places. The mobile phone tower and exchange installed at Tapovan colony has been washed away.

B) Vishnuprayag Hydro Electric Project - 400 MW (JPVL)

The Power Plant was shutdown on 16.06.2013 at 01.40 hrs due to heavy silt in the river water. The river inflow started increasing as heavy surge of water was reported in the Khiroganga nallah and in the areas upstream of the barrage. In the early morning of 17 June 2013, the flood water reached the top of barrage and started over flowing from the top of barrage. By about 11.30 AM of 17 June 2013, the following was visible at the Barrage area.

- (a) The Barrage structure & Gates & Intake Structure were buried under the accumulated boulders & muck.
- (b) The original river path, both upstream & downstream of the barrage was filled with boulders & muck brought down in the river flow.
- (c) The complete hill slope & constructed civil structures (including office block, retaining walls, road etc.) on the left bank had been washed away.
- (d) The river had diverted its path, and was flowing from left bank i.e. path / line of the washed away hill slope & constructed structures.

Extent of damages in the Barrage area can be assessed after removal of boulders / muck. The NH-58 downstream of barrage in a length of about 11 Km is cut-off at number of locations with slides and bank erosion by the swollen Alaknanda river. Restoration of barrage works is planned to be taken up immediately after NH-58 access is available. Time of restoration work can only be assessed after availability of NH-58 and removal of boulders / muck from the Barrage area

C) Tiloth Power Station (Maneri Bhali-I HEP) -90 MW-(UJVNL)

Tiloth Power Station (Maneri Bhali-I HEP) is under shutdown since 16.06.2013 due to heavy siltation. Draft tube gates are jammed due to heavy siltation. The draft tube gate of one machine lifted and the unit is likely to be synchronized. However, no damage to the power plant has been reported by the Project Authority.

1.50 When the Committee desired to know whether the Power Projects in Uttarakhand aggravated or contained the impact of flash floods, the Ministry in a written reply stated:

"There is no evidence that power projects in the Uttarakhand have aggravated the impact of flash flood. Instead Tehri Dam Project has absorbed the high flood water and mitigated the impact of floods on Dev Prayag, Rishikesh and Haridwar".

1.51 On the question of bringing probability of flash flood into the planning process of the project itself, the Ministry stated as under:

"Yes, at the time of planning of the Hydro Power Projects, the probable maximum flood had been taken into account".

1.52 Explaining the impact of floods in Uttarakhand on hydro projects, the Secretary, Ministry of Power stated during evidence:

"The points raised by the Hon'ble Member regarding hydro water projects are very correct and topical and in my opinion, he is very experienced as he hails from the area. We should definitely take lesson from the recent natural disaster in Uttaranchal and seriously reconsider as to what steps should be taken to ensure that the hydro power projects getting implemented in the hilly areas do not prove damaging to the area in times of disaster, rather they should prove beneficial. You must be aware that when the disaster took place in Uttarakhand, the Tehri dam came to rescue because it had the capacity, the reservoir was not full so the downpour coming from upwards flowed into the dam. Thus it saved to a great extent. Tehri dam stopped the flow of water as per its capacity from going out. This is fine example. Afterwards, I would request the president, Tehri Hydro Project to explain as to how the Tehri dam came rescue. This is a lesson as well as a view-point that if we select the right place and construct at the proper site, it will prove beneficial."

XI PERFORMANCE OF CENTRAL PSUs IN HYDRO-SECTOR

1.53 The details of target set, capacity achieved and slippages for hydro capacity addition during 11th Five Year Plan in respect of NHPC, THDC, SJVNL, BBMB, NEEPCO and DVC and hydro projects of NTPC are given as under:

Sl No.	Undertakings	Target (MW)	Achievement (MW)	Slippages (MW)
1.	NHPC (including NHDC)	5,322	1,150	4,172
2.	THDC	400	400	0
3.	SJVNL	412	0	412
4.	BBMB	0	0	0
5.	NEEPCO	600	0	600
6.	DVC	0		0
7.	NTPC (Hydro)	1,920	0	1,920

1.54 The reasons for shortfall or non-achievement of targets have been dealt with in Committee's 28th Report. The Reasons briefly are as under:

- i) Geological surprises
- ii) Natural Calamities
- iii) Environment and Forest Issues
- iv) Rehabilitation and Resettlement Issues

1.54 A Apart from non-achievement of capacity addition targets, the financial performance of NHPC is going down. For instance as against sales of Rs. 5509.65 crore in 2011-12, it went down to Rs.5049.13 crore in 2012-13. Similarly, net profit dipped from Rs. 2771.77 crore in 2011-12 to Rs.2348.22 crore in 2012-13.

1.55 During the course of examination, the Committee pointed that the Ministry has not considered vacancy at the level of CMD in PSU as one of the possible reasons for non-addition of hydro capacity. On being pointed out by the Committee that there is no regular incumbent of the position of Chairman and Managing Director of NHPC and the post has been lying vacant since 1st January, 2011, the Ministry in a written note stated as under:

"The process for filling up a Board level post in a CPSU involves intimation to Public Enterprises Selection Board (PESB) of the

vacancy by the Administrative Ministry, freezing of job-profile of the post, advertisement of vacancy, interviews and recommendation of candidate by PESB. This is followed by vigilance clearance from CVC. Once vigilance clearance is received, with the approval of Minister incharge, a proposal is moved by Administrative Ministry to DOPT for seeking approval of the ACC.

As per the extant guidelines, the process/action for filling up the post is required to be initiated at least two years in advance of the anticipated vacancy. The PESB was requested vide this Ministry's O.M. dated 21.4.2009 for circulating the vacancy for filling up the post of Chairman & Managing Director, NHPC Ltd. i.e. about 1 year 9 months in advance.

1.56 On a further question about the steps taken by the Ministry for filling up the post of CMD in NHPC and the reasons as to why this position has been lying vacant for a long time alongwith the details of the steps taken to fill up the post the Ministry replied in a note:

"The post of Chairman and Managing Director, NHPC Limited, a schedule-"A" post in the scale of pay of Rs.80,000 – 1,25,000 has fallen vacant w.e.f. 1.1.2011. Accordingly, PESB was requested vide this Ministry's O.M. dated 21.4.2009 for circulating the vacancy for filling up the post of Chairman & Managing Director, NHPC Ltd. followed by a number of reminders. Consequently, after freezing of job-profile, advertisement and holding interviews, the PESB vide their U.O. No. 6/2/2010-PESB dated 22.10.2010 recommended the names of two officers in the order of preference in the panel for appointment to the post of CMD, NHPC Limited. This Ministry solicited vigilance clearance in respect of these officers from CVC in order to send the proposal to the Department of Personnel & Training (DoPT) for obtaining the approval of ACC for the appointment of CMD, NHPC Ltd. However, CVC vide their communication No. 010/VGC/159/123935 dated 5.4.2011 denied vigilance clearance to both these officers.

In view of above, this Ministry vide D.O. letter of even no. dated 23.05.2011 requested DoPT to place the proposal for scrapping the panel for the post of CMD, NHPC Ltd. for orders of ACC. DoPT vide their communication No. 20(15)EO/2011(ACC) dated

22.6.2011 conveyed the approval of ACC, scrapping the panel recommended by PESB for appointment to the post of CMD, NHPC Ltd. Accordingly, PESB was requested to re-advertise the post of CMD NHPC.

The post of CMD, NHPC was re-advertised by PESB on 11.7.2011 considering the date of vacancy as 22.6.2011. Interviews for the post were held on 30.9.2011 and PESB vide their letter dated 30.9.2011 recommended the name of Director (Finance) of NHPC for selection to the post of CMD, NHPC. V&S Division of this Ministry intimated that the vigilance clearance in respect of selected officer has been denied by CVC on 3.8.2012. The DoPT was requested for permitting disclosure of 2nd name in the panel during September, 2012. On 4.10.2012, PESB was requested to intimate the 2nd name and extend the validity of the panel recommend by them earlier. PESB intimated 2nd name of Director (Projects) NHPC Limited and extended validity of panel upto 30th March, 2013. The V&S Division of the Ministry was requested on 10.10.2012 for providing Vigilance Clearance of Director (Projects). The CVC vide letter dated 17.07.2013 intimated its inability to accord clearance to Director(Projects) at present but the same will be reviewed when all the cases will get be examined by CVC. With the approval of Minister of Power, a proposal has been moved for approval of ACC for scrapping of the Panel. Decision is awaited. In case the ACC approves scrapping of panel, the process for filling up of the post would have to be re-initiated and filling up the post would require 8-9 months.

Both the officers selected by PSEB have filed separate writ petitions in Hon'ble High Court of Delhi. First Officer has challenged the issuance of 'Censure' by MOP on the basis of minor penalty proceedings. The Court on 31.10.13 has disposed-off the WP with direction to MOP to issue a speaking order of 'Censure' within 4 weeks. Further, his appeal for review of 'Censure' is pending in MOP. Second Officer has challenged entrusting additional charge of CMD, NHPC to JS (Hydro) instead of him. The Hon'ble Court in hearing dated 16.9.13 ordered to examine whether he can be given additional charge with approval of the Minister of Power as per extant Rules/guidelines. The MOP has referred the matter to DOPT on 08.10.2013 for advice which is

still awaited. The next date of hearing of the case is 31st January 2014.

In the interim, additional charge of CMD, NHPC was held by Director (Finance) from 01.01.2011 to 23.07.2012 and by JS, Ministry of Power since 24.07.2012.

1.57 On the issue of impact on the performance of NHPC in the absence of leadership in NHPC, it has been replied that

"The performance of NHPC since the absence of regular CMD i.e. January 2011 can be broadly gauged by the projects commissioned and its profitability. During this period, NHPC has fully commissioned Chamera III- 231 MW in HP, Chutak - 44 MW in J&K, TLDP-III - 132 MW in W.B. and Nimmo- Bazgo - 45 MW in J&K projects. In addition, 180 MW (three units of 60MW each) of URI-II (4X60 = 240MW) in J&K has also been commissioned. The Net Profit of NHPC during 2011-12 & 2012-13 is Rs. 2771.77 Cr and Rs.2348.22 Cr respectively. The works of Lower Subansiri Project are stopped since December, 2011 and contractual issues in Parbati-II Project could be resolved only recently.

The above stated performance of NHPC may not be solely attributed to the lack of leadership or otherwise. However, the fact remains beyond any argument that only a regular incumbent can exercise better and effective management in overall interest of the Organization.

1.58 However, the Committee note that there is a sharp decline in the share price of NHPC which is now (November, 2013) RS. 17.95 whereas at the time of IPO share price was Rs. 36 (2010). Other parameters regarding performance of the NHPC are also not satisfactory.

PART – II

OBSERVATIONS/RECOMMENDATIONS OF THE COMMITTEE

1. The Committee find that there is huge gap in the requirements of power and the energy supply in the country. Despite various policy initiatives and measures taken to minimize the gap between demand and supply, the capacity addition of power is not commensurating with the exponentially increasing power demands in the country. Although the capacity addition in the 11th Plan (54964 MW) has been significant, as claimed by the Government, but even this increase is not sufficient to mitigate the power woes of the people. This is perhaps due to the unbalanced emphasis only on one of the type and segment of energy i.e. thermal. Capacity addition through thermal energy no doubt is a welcome step, but whether this only can help us in overcoming our problem is yet to be proved. Moreover, it has its own inherent cost ingredients which if not taken care of, may lead to a situation wherein common man will have forced deprivation to this type of electricity. The Committee believe that instead of a lop sided preference for a particular type of energy, it will be prudent if all types of energy based on the availability of resources in the country are taken care of for their due development and proper harnessing. Hydro energy alongwith all sorts of renewable energies and nuclear energy can be the best and cost effective supplement of the thermal energy besides being eco-friendly. India has been endowed with all kinds of natural resources which include water, wind and solar. However, we are far from converting these resources into energy substantially and that is

why we are still an energy deficit nation. The abundant availability of water in our country can offset the energy deficit if hydro energy is developed properly and in a time-bound manner. Although the hydro projects involves a very tedious process from conception to implementation, yet we have no option but to go for it if we genuinely intend to resolve our energy issues. Owing to its inherent characteristics hydro power can be the best and competitive choice in meeting our energy requirements and also in minimising the gap between demand and supply. Hydro power is a renewable, non-polluting and an environmental-friendly sources of energy. Hydro power stations have inherent ability for instantaneous starting, stopping and managing load variations which are helpful in improving reliability of power system. The life of hydroelectric projects are also well over 50 years and they are free from green house gases, toxic wastes and particulate matters. Development of hydro power projects provides the added advantage of development of remote and inaccessible areas of the country. The cost of hydro power economizes with the passage of time and does not involve any unforeseen or overhead expanses. In view of the foregoing, the Committee strongly recommend that Government must strive hard and pull all armories up its sleeve for proper, effective and time-bound development of hydro potential in the country so as to ensure its optimum harnessing for the benefits of its people and progress of the country.

PERIODICITY OF HYDRO POTENTIAL ASSESSMENT

2. The Committee have been apprised that the assessment studies of hydro electric potential in the country was done by Central Electricity

Authority during 1978 to 1987. Since then, about more than two and half decades has passed with regard to any methodological and scientific assessment of hydro power potential in the country. The Committee have also been informed that there is not set timeline to determine the validity of such studies. Regarding practice in other countries for assessment of hydro potential in terms of its periodicity no information has been made available to the Committee. However, in India the first systematic hydro electric survey was done during 1953-59 and the same was updated from time to time. If the time gap between the two studies done in India is taken into account to determine the criteria for assessment of hydro potential, the next assessment has become due. With regard to any need for re-evaluation of hydro power potential in the country, it has been stated that the re-assessment studies carried out earlier were desktop studies which were based on available survey India maps at that time and available hydrological data. As such there is a need for review of the hydroelectric potential in the country to take into account the additional hydrological, topographical and other data about upstream and downstream water usage in the last 25 years. Such review must be carried taking into consideration the actual site constraints in terms of geology, submergence and other aspects including impact on environment and forests. The Committee are of strong view that it should be done at reasonable and quick periodicity taking into account the factors which are impeding the growth of hydro sector in the country. The potential assessment study may also look into aspects which are responsible for the delay of the execution of the projects and how best they can be addressed from time and

cost viewpoint. The Committee, therefore, strongly recommend that in spite of the fact that there is no set timeline to determine the need for hydro potential assessment study, it will be befitting if it is done at regular intervals taking into its fold the reasons responsible for delay in harnessing the potential alongwith the plausible solutions for ensuring the proper development of hydroelectric projects in the country.

HYDROELECTRIC POTENTIAL

3. The Committee note that the hydro power potential in terms of installed capacity has been estimated to be 1,48,701 MW of which 1,45,320 MW of the potential consists of hydro electric schemes having capacity above 25 MW. As on May, 2013, the basin-wise details of the present installed capacity of hydroelectric projects reflects that Brahmaputra basin has the highest capacity followed by Indus river whereas Central Indian rivers has lowest capacity followed by the west flowing rivers. Although Brahmaputra basin has the maximum potential yet the capacity under operation alongwith the capacity under construction is the lowest here which is only about 11.33% of the potential. Out of the 66,065 only 2,120 MW capacity is in operation whereas a capacity of 5,292 MW is under construction. This is very sorry state of affairs. The Committee feel that because of the under development of hydro potential in this region, the overall hydro development of the country has suffered as the minimum development among the basin-wise region is in Ganga which is about 32%. In central Indian rivers , it is about 92%, west flowing rivers it is about 64% while in east flowing rivers it is 60%. Similarly, the negligible

development of hydro potential in the North-eastern Region (less than 7%) has affected the overall growth figure of the hydro potential in the country. Despite having the largest share in terms of potential, the development in the North-eastern Region of hydro power has not been done. The Northern Region, though relatively has performed well but 29,716 MW capacity is yet to be developed out of the potential of 52,263 MW which is about 57%. Western Region has developed about 73% of its potential which is 5552 MW out of the potential of 8131 MW while a capacity of 400 MW is under development. The picture in the Southern and Eastern Region is also not very satisfactory at about 38% and 48% of the hydro potential is yet to be developed there. The Committee feel that huge work is yet to be undertaken to harness the hydro potential of the various regions of the country particularly North-Eastern Region. In spite of the fact that hydro projects are site specific and tailor made depending upon the topography and geology of that area, yet it should also be assessed as to which river or basin can be more quickly acclimatized to our requirements from hydro station viewpoint. As it is, it is a tailor made exercise and hence there is sufficient weighing options for a decision as to which site may be more appropriate for installing a power plant. The Committee, therefore, recommend that hydro power potential in the least developed region i.e. Brahmaputra Basin and North-Eastern Region should be given top most priority. It should also be assessed to which areas of the basin may be lesser unfriendly for the purpose of exploitation of hydro power potential.

4. The Committee note that the progress in harnessing the hydro power potential has been extremely tardy. The factors responsible for sluggishness

in the sector are same and identical which have been plaguing it since its inception. As usual, they have been enumerated like difficult and inaccessible terrain, land acquisition problems, resettlement and rehabilitation issues, environment and forest clearances, law and order problems, longer gestation period, geological surprises and inter-state aspects. These factors are inherently ingrained with the establishment of the hydro plant and hence in the view of the Committee they cannot be treated as hurdles affecting the pace of the development. While conceptualizing the project these factors (so-called reasons for delay) are taken into consideration with their thread bare analysis and indepth studies before taking a final call in this regard. These issues, the Committee, believe, if handled deftly should help in curtailing the gestation period of hydro projects. Land acquisition is an issue which may pose some problem, but a consensus can be arrived at with concerned parties or stakeholders highlighting the benefits which are likely to accrue to them, to their areas as well as to the country. Other issues like inaccessible terrain does not hold good in today's advanced technological era wherein road and communication network can be spread sooner than expected. Geological surprises is also a very lame excuse as it should be taken care of at the stage of Survey and Investigation itself. Environment & Forests clearances can be taken care of by conforming to all the statutory requirements and the problem of Law and Order can be minimized by ensuring that the interests of the local people are not unduly harmed. The Committee, therefore, do not consider reasons for slow development of hydro sector of the country unmanageable

and recommend that these are not the insurmountable reasons and should not become a ploy for excuses and non-performance by the concerned agencies.

STATUS OF DEVELOPMENT OF HYDRO POWER

5. The Committee note that the hydro power generation in the country is 39,788 MW against the estimated potential of 148701 MW. This is about 27% of the identified potential. A capacity of 13,320 MW is under construction which is fully about 9% of the potential. Of this, the share of central sector is only 9612 MW. The Committee are aware that hydro sector is open to private and sector as well state. Nonetheless central sector also has its significant presence in the arena and can do much better if proper attention paid to the cause and appropriate steps are taken with sincerity in pursuit of the cause. There is no dearth of resources, manpower, expertise and other infrastructural support. Despite this backup, the achievement of central sector in hydro power betrays the capacity of the Government to push forward the sector and speaks volumes about their apathy. Despite a number of benefits that hydro energy provides, the non-attention to this sector by the Government has preposterously twirled the balance among the types of energies available in the country, tilted it dangerously in favour of thermal energy making the nation disappointingly dependent on thermal energy with no control on the prices of energy fuel and with no certainty about its availability. The Committee, therefore, strongly recommend that with a view to ensure the proper percentage blend of the various types of available energies in the country, hydro energy should be given proper attention for its time-bound

development. This will go a long way in strengthening the energy security of the country beside making available the green energy in competitive terms ultimately benefiting the people.

6. The Committee note that the performance with regard to capacity addition during the 11th Plan has been extremely disappointing. The 11th Plan target of capacity addition of 15627 MW was curtailed to 8237 MW during mid-term review. Of it, 2922 MW was the share of Central Sector for achievement 2854 MW in State Sector and 2561 MW in private sector. However, only 5544 MW could be achieved wherein the performance of central sector was only 1550 MW during the entire 11th Plan. The Capacity Addition target for the 12th Plan has been set to be 10897 MW. This is ridiculous moreso when States and private sector share is also in this figure. The target for central sector for the entire 12th Plan has been fixed as 6004 MW and 527 MW has been commissioned from the target of 12th Plan period so far. Although no year-wise targets are fixed for achievements, yet more than one and half year of the 12th Plan is already over and if the achievements are taken into account on annual basis, the targets of this plan are sure to meet the fate of the previous plan. As of now, the NHPC projects under construction are of 3810 MW. NHPC is a leading Central PSU. Of the 3,810 MW, the capacity of Subansiri lower project is 2,000 MW and the work there has been stopped since December, 2011. Even if the work is started in the project right now it may not be possible to complete it by the end of the 12th Plan. Similarly, the 800 MW of Parbati II is scheduled for commissioning in July 2018. The Committee are not sure about the targets of other Central Sector PSUs i.e. THDC, SJVNL, DVC, etc. Even if

their capacity addition programme go as targeted, yet it cannot be said that it will help in achieving the central sector target of the 12th Five Year Plan. The Committee feel that there is a great void in the target fixation and the ground realities of the hydro power sector. Despite all these uncertainties the Committee feel that the target of the 12th Plan may be attainable for the Government as there are still three more years to go. Since the targets for 12th Plan are much less as compared to the targets of the previous plan, the Committee strongly recommend that every effort should be made to ensure that the target for the 12th Plan are achieved.

7. The Committee note that there has not been consistency in the development of hydro energy during the Five Year Plans. It has been a saga of ups and downs wherein the downs are weighing heavily while in the third plan, the capacity addition from hydro was 2207 MW constituting above 45 per cent of the total installed capacity. Thereafter, in the 4th Plan, it plummeted to 1058 MW registering the decline of more than 100 per cent as against the achievement of 3rd Plan. Similar was the growth in 6th Plan which was 3706 MW as compared to 3867 MW of the 5th Plan. The 8th Plan registered the growth of 2427 MW against the 7th Plan achievement of 3828 MW. During 10th Plan the achievement has been 7886 MW but again it nose dived in the 11th Plan making it 5544 MW. It has seen a consistent decline in the proportionate share of hydro right from 3rd Plan period onwards when it was 45.68 per cent of the total installed capacity and now it is only 17 per cent of the total installed capacity. Any developmental activity has rising tendency in itself and vis-à-vis other similar competitive activities. However, the hydro developmental activity

has failed on both these counts. In its own secluded growth it has not maintained a trend whereas when compared with other such activities it has registered only a downtrend. This is frustrating and cannot be allowed to happen. It is a time when message should be sent in clear and stern terms that the concerned organizations and individuals will have to perform lest other measures are taken recourse to ensure their performance.

The Committee have been informed that nine NHPC projects of 11th Plan have slipped into 12th Plan of which only four projects for total generation of about 450 MW could be commissioned whereas projects for 2800 MW are likely to slip to the next plan. The Committee are not convinced about the various steps, including policy measures, taken to augment the hydro capacity in the country. The sector was opened in 1991 to private entrepreneurs streamlining the clearance process by introducing 3 stage clearance approach for development of hydro projects in central sector. The policy measures like National Electricity Act, 2003, National Electricity Policy 2005, Tariff Policy 2006 and Hydro Policy 2008 have squarely failed to enthuse the hydro sector. Reasons adduced for slow pace of development are same and repetitive. The futility of these measures can be gauged from the fact that the Government has been unable to give any firm timeline for completion of the projects categorized under various stages of development. The Committee, therefore, recommend that a realistic and panoramic approach should be adopted for the growth of hydro sector in the country. This approach should encompass all the problems besetting the sector with their

plausible and logical solution and the working in this sector should be such as to provide transparency and level playing field to all the stakeholders.

8. The Committee note that about 75 per cent of the conventional hydro potential is yet to be developed. A capacity addition target of 10,897 MW has been set for the 12th Plan period whereas projects of 13,320 MW (inclusive of 12th Plan target) are under construction. This constitute only about 9 per cent of the identified potential. The Committee has also been informed that 36 projects having a capacity of 20,873 MW having concurrence by Central Electricity Authority but are yet to be taken up for construction since 2002-03. Usually the construction work of hydro electric projects starts within a year after clearance by CEA. The reasons for delay has been attributed to the non-clearance from environment and forest angle and would be taken up for construction after receiving the required statutory clearance tying up of funds and award of work. The Committee have also been told that 23 projects with capacity of 11,836 MW are under examination of Central Electricity Authority and other involved agencies. Instead of spelling out as to why these projects are stuck the details regarding procedure adopted by CEA, CWC and GSI for clearances of projects have been provided. This inter-alia include aspects related to hydrology, dam/barrage design, hydel civil design, foundation engineering, Seismicity construction machinery, civil cost, geology of the area, adequacy and suitability of construction material, pondage provision, quantities of civil work etc. Here, it is worthwhile to mention that CEA is required to give concurrence within 90 working days from the receipt of the complete Detailed Project Reports. 28 Hydro Projects with a capacity of 9590

MW were returned to Project Authority for re-submission after tying up all the requisite inputs. The reasons for returning the DPRs have been stated to be the inadequacies in geological and geo-technical investigations, hydrological data and other investigations important for selection of type of project and its components. The Committee have also been informed that 87 Hydroelectric Projects with capacity of 18564 MW are under Survey and Investigation. The Government has not replied clearly as to the time since when the S&I work is going on and also by which time these work will be completed. The Committee are disappointed by the dismal scenario of hydro sector as capacity of about 61,000 MW is stuck in procedures and wrangles. It is incomprehensible as to why the projects that got the concurrence of CEA and other bodies more than a decade ago are still in limbo. This is unpardonable and merits exemplary action. The Committee feel that the entire mechanism – from concept to start of the project – for installing the hydro project needs complete over-hauling. The various agencies of the Union Government are responsible for this state of affairs. Why can't there be a system wherein all the concerned agencies involved in the process of according concurrence ranging from environment/forest Departments, CEA, CWC, GSI, MHA and Ministry of Defence (wherever required), Environment etc, make a uniform platform for examining their aspects of the project and provide concurrence or alternatively suggest solutions if some shortcomings are noticed hindering the smooth passage of the project. This system will also help in curbing the submission of incomplete DPRs, wastage of time in their appraisals and subsequently returning them on being found wanting. The Committee,

therefore, are wary of the reasons given for non-performance in the hydro sector and recommend that structural arrangements consisting of representatives from the respective quarters with unified command be immediately thought of for prompt and positive disposal of the issues obstructing the growth of hydro sector and paving the way for expeditious development of the hydro energy in the country. The preparation of pre-feasibility report should be also be made compulsory before undertaking any hydro project.

9. The Committee observe that the role of the Central Government in the development of Hydro Sector in the country should not be limited to a facilitator but expand to an active promoter as well. Despite division of responsibilities and involvement of state and private sector, its role cannot be minimized. Given the availability of resources, manpower, technical know-how and opportunities at its disposal, the Union Government must play a role of torchbearer for hydro energy development of the country. The hydro potential is available in abundance and the projects below 25 MW (not under the domain of Ministry of Power) also have great potential. If efforts are properly synchronized to harness the above potential, it will definitely solve our energy woes and over a period become economical for the people. There can be no better agency to coordinate these efforts than the Government of India. As a lot of time has been lost and we have done precious little for harnessing the potential of this important energy sector. Instead of identifying the reasons for non-performance or deflecting responsibilities, it is high time that sincere and coordinated approach should guide us in our endeavour to develop hydro

potential. We should also ponder over the fact as to why various measures taken in this regard have not yielded the desired results. There is acute need of electricity while no dearth of talent and resources in our country. It is, perhaps, our resolve which is not as determined and that is a crucial factor for our backwardness in utilizing the hydro potential. No State or private entity can take the lead in this regard. It is only the Government of India with which the initiative vests and it cannot allow the situation to drift any further. Most of the agencies involved in clearances are its own and it can play a very constructive, positive and lead role for timely development of hydro energy in the country. The Committee, therefore, strongly recommend that Union Government should discharge its duties with a sense of responsibility that has been bestowed on it for the development of available hydro potential in the country in a time-bound manner.

PUMPED STORAGE SCHEME

10. The Committee note that there is 96, 524 MW identified hydro power capacity under Pumped Storage Scheme in the country. 4785 MW is under operation while 1080 MW is under construction. It is general practice to develop conventional Hydro Projects on priority and subsequently develop pumped storage schemes to provide system reliability etc. when surplus/economical off peak power is available. The electricity produced by pumped storage schemes may be used during Peak hour. During off-peak time, the water is pumped from the lower reservoir of pumped storage project to upper reservoir and during peak hour, electricity is generated. The concept

of pumped storage scheme can provide enumerable opportunities of generating hydro power. The Committee are not sure about the land area requirement for such projects, its geology and topography, hydrological data, geo-technical investigations and requirement of water etc. alongwith its flow but the scheme can be a multi barrel instrument in fulfilling our energy demands. It can also be an agency for providing local irrigation and other water related requirements. Over a period of time it may become economically competitive and provide the base for large scale water storage. In our country, this concept is perhaps only at an experimental stage. It should be ascertained in what manner it has been working elsewhere and how it can be made conducive and competitive to our requirement and environment. The Committee, therefore, recommend that the identified potential under the Pumped Storage Scheme should be developed optimally and it should also be explored as to how this capacity can be further augmented in the minimum possible time-frame.

HYDRO POLICY

11. The Committee are aware that the Government notified Hydro Policy 2008 to augment the developmental activities of the hydro sector. The policy inter-alia included the cost plus tariff regime being extended for public as well as private sector Hydro Power Projects, transparent criteria for awarding sites to private developers, enabling developer to recover his additional cost through merchant sale of 40 per cent of the energy etc. The policy also stipulated some responsibilities to private developers of the hydro projects.

Prior to this policy announcements were made in the year 1991 and 1998. They also laid emphasis for accelerating pace of hydro development and included, Basin-wise development of hydro potential for optimal use of river basins, execution of mega projects with an installed capacity of 500 MW and above through Central Public Sector Undertakings in case of State or private sector is not in a position to implement these projects, Encouragement to private investment through joint ventures or independent power producers, through survey and investigation of the potential hydro sites on an advanced scientific basis before preparation of Detailed Project Report (DPRs), simplification of procedure for clearances to save time, money and reduce gestation period, development of small and mini hydro projects and allotment of hydro projects upto 100 MW to the private developers through MoU route. The Government set the goal of power to all by the year 2012. Hydro Policy 2008 also attempted the pursuit of the above goal by inducing private investment in hydro power development, harnessing the balance hydro-electric potential, improving resettlement and rehabilitation, facilitating financial viability of hydro projects etc. The Committee note that these policy initiatives and thrust measures of the Government have not been able to make the desired impact. They have failed to generate conducive environment, all-round participation for the development of the hydro sector. Policy measures like merchant sale of energy upto 40 per cent has also not helped in attracting the required investment. The Committee are of the opinion that unless substantive issues like Survey and Investigations, Preparation of DPRs, Statutory Clearances, Rehabilitation and Resettlement, Arrangements of Funds at competitive rates,

Reduction in the Gestation Period are addressed effectively, any exercise will only be superficial and unsubstantive without any concrete results. Policy initiative results can be expected to accrue after a particular time gap. However, in the instant case the policy measures of 1998 as well as up to 2008 have not succeeded in a scaring away the gloomy scenario of hydro sector. This has raised doubts about the validity and efficacy of the policy measures itself. The Committee, therefore, strongly recommend that a thorough review of the policy measures should be done and new elements in the policy be introduced for making it more meaningful and sector friendly addressing the issues which are hampering the growth of hydro sector.

PRIVATE SECTOR PARTICIPATION

11. The Committee note that the hydro sector development in the country is mainly done by the Central Government, State Government and the Private Entrepreneurs. Of the developed capacity of 39788 MW of hydro power the share of private sector is only 2694 MW constituting 7 per cent of the developed capacity. This is too meager and marginal. Despite a plethora of steps, private sector has not responded the way it was expected to in the development of the hydro sector. In the 12th Plan, the private sector has been given the target of 3285 MW out of a total target of 10897 MW of hydro power. Given the past performance and achievements in the 11th Plan, which was only 1292 MW, this seems to be an ambitious target. The returned incomplete DPRs of the aggregate installed capacity of 9590 MW mostly belong to private sector. However, the Committee are sure that it will not have any bearing in

the target pursuit as work on any of these DPRs might not have begun and it is only from the ongoing projects that this 12th Plan target is decided. The involvement of private sector brings in additional resources for capacity addition and power and create competitive spirit in the sector. However, this has not happened in our hydro sectors despite the required measures taken in this regard. 17 projects with a capacity of 12144 MW have got concurrence of CEA but yet to be taken up for construction, project worth 588 MW under examination of CEA and capacity of 17529 MW in 64 projects are under Survey and Investigation of private sector. These projects are for 13th Plan and beyond as the target for 12th Plan has already been decided. This leads to a very disappointing scenario as far as the private participation is concerned as the capacity addition under various categories of projects will take decades to materialize and by that time their proportionate share may not be as expected. The Committee are not satisfied with the present status about private participation. The Committee, therefore, strongly recommend that a conducive atmosphere should be created through requisite measures to encourage private participation in the hydro sector of the sector.

CONSTRAINTS IN DEVELOPMENT OF HYDRO SECTOR

12. The Committee note that the constraints affecting the development of hydro sector are more or less similar as mentioned in the preceding recommendations and vary from long gestation period to local issues including law and order problem. On technical aspects clearances from CEA, CWC, GSI, MoEF also appear more like a problem than a solution and

facilitation. Of late, the issue of rehabilitation and resettlement of the project affected persons has also attained such proportion which can not only delay the projects but also halt it altogether. The issue at hand can best be illustrated by the fate of Subansiri Project. Recently a tendency is cropping up wherein the imaginary rather than realistic problems tend to throw the entire activities out of gear. If not quelled affectively this may become a major cause of concern for all hydro projects. Although natural calamities have not significantly affected the pace of development yet we cannot afford to ignore this aspect as well for unhindered growth of the sector. In the view of the Committee, the transfer of projects to other developers after the completion of Survey and Investigation is going to pose major constraints if continued unabated. The Committee are of the opinion that to overcome the constraints of development of hydro sector, the measures such as timely completion of Survey & Investigation works, preparation of DPRs and their time bound clearances from various organizations, proper and smooth road connectivity, reliable communication infrastructure and effective coordination with various agencies like Border Road Organisation, State PWD, State Police, Ministry of Road and Highways etc., development of useful waterways which are helpful in developing hydro power projects, easy access to construction material near and around the site of Hydro Power Projects, farsighted leadership in resolving various local issues in coordination with the State Government and other concerned agencies/persons, adequate security measures to safeguard personnel and machinery deployed for the implementation of various projects without time and cost overrun, will go a long way in strengthening the sector

and removing the bottlenecks impeding its growth. The Committee, therefore, recommends that adequate steps should be taken to remove the identified, known, perceived and notional constraints for ensuring the fast growth of the hydro sector in the country.

IMPACT OF FLASH FLOOD

13. The Committee note that there has been worst devastation of life and property in Uttarakhand due to the sudden and flash flood occurring there in July, 2013. A large number of hydro projects are in operation or coming up in the State of Uttarakhand and hence it is likely that these projects might not have been let off from the flood fury. The projects such as Tapovan Vishnugad, Lata Tapovan, Tehri HPP, Tehri PSP, Singoli Bhatwari, Phata Byung HP, Dhauliganga Power Station, Vishnuprayag Hydro Electric Project and Tiloth Power Station have been damaged extensively. Important and vital structures have been washed away and the water resources have been filled with slush and boulders. Besides, Plant and Machinery have also been affected leading to halting of work and delay in the functioning of the projects. It has also been stated that the Tehri Dam has helped in containing the damage otherwise it could have been of huge proportions and irreparable dimensions. This could happen because the large reservoir of the Tehri Dam could accommodate the maximum quantity of water of the flash flood. Had this not happened, large swathes of land even in the plains could have been washed away. The Committee find the outcome and impact of the flood to be of mixed nature. On the one hand good number of hydro projects have been

affected involving thousands MW of electricity whereas on the other Tehri Dam could save us from large scale destruction. In this regard, the Committee would like to emphasize that such preventive measures should be taken which can ensure the lesser damage to the plants in the eventuality of nature's vagary of this dimension. It is not an impracticable proposition given the fact that Tehri Dam could withstand the same catastrophe. This mechanism could be inbuilt in the operational plant while it can be a pre-emptive measures for those plants which are in the offing. Simultaneously, the Committee would also recommend that the positives of the Tehri Dam episode containing the flood ravages should be appropriately highlighted informing the people that the Hydro Projects can also act as shield of the people from nature's quandary.

PERFORMANCE OF CENTRAL PSUs IN HYDRO-SECTOR

14 The Committee note that a leading hydro organization of Government of India like NHPC is being run without a regular Chief Executive for the last about three years. Various reasons have been given for poor performance of NHPC in capacity addition programmes. The Ministry has however, failed to list the major reason i.e. continuous vacancy at the level of CMD in the organisation. The Committee are aware of the laid down procedure for selection of incumbent and the preparatory steps taken by the Government in this regard. However, it is intriguing that the outcome of all the efforts has not yielded the desired results creating a situation wherein not only the institution but also the hydro-sector has been affected adversely because it is

unprecedented that two panels selected after arduous exercise have been recommended for scrapping. From the replies submitted to the Committee it can be seen that out of the four incumbents recommended for the position in two exercises one after the other undertaken for selecting CMD, three are the senior most functional directors of the NHPC and at both the times the first nominee was from the organization itself. Not only that the first nominee of the second exercise has also discharged functions of the CMD from 1st January, 2011 to 23rd July, 2012. If the post of CMD could not be filled because of the vigilance issue, it is baffling how the three of them are still continuing in board level positions and how one among them discharged the functions of CMD for considerable period. The Committee strongly feel that the Ministry owes an explanation for this serious lapse. It appears that the role of CVC in according vigilance clearance needs review. CVC took about 6 months to deny or accord vigilance clearance for the first panel and 11 months to deny or accord vigilance clearance for the second panel. Similarly, it is inexplicable as to how the four nominees have not been accorded the CVC clearance after recommended by PESB particularly when three of them are occupying board level positions in NHPC and are still working there. Similarly, there ought to be some time-frame for according vigilance clearance by the concerned agencies. The Committee believe that before forwarding the names for interview to PESB, vigilance angle should have been taken into account by the controlling authority particularly for in-house candidates. There is no reason why the Ministry did not learn any lesson after the first fiasco and allowed repeat performance for the second attempt. In the entire scenario the role of

the Ministry is highly questionable as the issue has been handled in a callous manner resulting in impacting a major hydro sector PSU. Out of 3 in-house officers, 2 have gone for court's intervention resulting in wasting the time and resources of the Government. The Committee feel that the entire issue should be properly enquired and responsible persons should be identified for their acts of omissions and commissions. The entire events have also led the Committee to believe the process of selection of board level positions needs a revisit exploring the avenues whether the role of administrative Ministry should at all be there in the selections of officers of Public Sector Undertakings under their administrative control. In the view of the Committee it is high time that selection procedure for PESB aspirants be made more objective, transparent and independent ensuring the element of justice and fair play till the nominee selected by PESB occupies the position within a defined time period and without the interference of administrative Ministry. The Committee, therefore, strongly recommend that the process of selection of board level position should be formulated in such a way that none of the bodies involved in the process can delay or halt it as an afterthought and the recommendations of PESB with regard to appointment of PSUs should not be scrapped unless an extraordinary situation has arisen which may seriously compromise the national interest.

**NEW DELHI
12 December, 2013
Agrahayana 21, 1935 (Saka)**

**MULAYAM SINGH YADAV,
Chairman,
Standing Committee on Energy**

Annexure-I

(Vide Para No.1.19 of the Report)

Hydro Electric Schemes Concurred by CEA and yet to be taken up for Construction since 2002-03

SI No.	Scheme/ Sector	Agency	Nos. x MW	IC (MW)	Est Cost (Rs Crs.) PL	CEA Concurrence	Remarks
	J & K						
1	PakalDul Central	CVPP	4x250	1000	5088.88 (07/05)	03.10.06 Validity extended up to 02.10.13 on 07.06.2012. Transferred from NHPC TEA to CVPP on 6.8.12.	EC obtained on 29.2.2008 and Forest clearance obtained on 16.5.2005 & 6.12.2010.
2	Ratle Private	GVKRHE PPL	4x205+1x30	850	5517.02 Comp.	19.12.12	EC obtained on 12.12.12, FC obtained on 27.04.2012.
	Sub-Total (J&K)			1850			
	Himachal Pradesh						
3	Kutehr Private	JSWEPL	3x80	240	1798.13*	31.8.10	Environmental cleared on 05.07.2011. Approval of stage-I for diversion of 61.4083 Ha of forest land accorded on 22.06.2011 and Stage-II forest clearance accorded on 19.02.2013. Technical and commercial bids for main civil packages received from pre-qualified agencies through ICB. Technical evaluation completed. Prequalification of agencies for HM & EM packages completed.
4	BajoliHoli Private	GMR	3x60	180	1696.93*	30.12.11	EC obtained on 24.01.2011. Stage-II forest approval obtained on 26.10.2012. Project is now under construction.
5	Miyar Private	MHPCL	3x40	120	1125.16 (Compl.)	07.02.2013	Environment cleared on 30.07.2012 FC Stage-I cleared on 27.07.2012.
	Sub-Total (HP)			540			
	Uttarakhand						
6	Vishnugad Pipalkoti Central	THDC	4x111	444	2091.43 (03/06)	21.9.06	EC obtained on 22.08.07 & 09.03.06 , FC St-I. accorded on 03.06.2011 & St-II awaited.
7	Kotlibhel St-IA Central	NHPC	3x65	195	1095.77 (12/05)	03.10.06 Validity extended up to 2.10.2014 on 27.11.2012	EC obtained on 9.5.2007 and FC St – I obtained on 13.10.2011 & St – II awaited.
8	Kotlibhel St-IB Central	NHPC	4x80	320	1806.43 (12/05)	31.10.06 Validity extended up to 30.10.14 on 23.11.2012.	EC given earlier on 14.08.07 is withdrawn on 22.11.10. MOEF declined FC.
9	Kotlibhel St-II Central	NHPC	8x66.25	530	2535.86 (03/06)	30.11.06 Validity extended up to 29.11.14 on 27.11.2012	E.C. accorded on 23.08.2007 F.C. declined.
10	Pala Maneri State	UJVNL	4x120	480	1922.8 (12/06)	23.02.07	EC obtained on 7.12.2005 and FC obtained on 6.6.2006. It is understood that the project has been discontinued by Govt. of Uttarakhand.

SI No.	Scheme/ Sector	Agency	Nos. x MW	IC (MW)	Est Cost (Rs Crs.) PL	CEA Concurrence	Remarks
11	Alaknanda Private	GMRL	3x100	300	1415.96*	08.08.08 Validity extended up to 7.8.2013	EC obtained on 12.3.08, FC St-I obtained on 8.11.11. St-II obtained on 09.11.2012.
12	RupsiyabagarKhasiy abara Central	NTPC	3x87	261	1715.15 (05/08)	16.10.08	EC obtained on 26.03.2009. Forest clearance awaited.
13	Vyasi State	UJVNL	2x60	120	936.23 (02/10)	25.10.11	EC obtained on 7.9.2007 and FC obtained on 21.10.1986. Fresh FC awaited.
14	Devsari Central	SJVNL	3x84	252	1185.76 (06/10)	07.08.12	Forest & Environment clearance awaited.
	Sub-Total (Uttar)			2902			
	Chhattisgarh						
15	Matnar HEP State	CSPCPL	3x20	60	313.35 (03/04)	19.08.04	Yet to be cleared by MOEF.
	Sub-Total (Chha)			60			
	West Bengal						
16	Rammam St-III Central	NTPC	3x40	120	633.92 (02/06)	12.9.06 Concurrence validity extended up to 11.09.2014 on 02.07.2013.	EC obtained on 7.8.2007 and FC obtained on 23.5.2008. Tender was annulled due to high cost. Retendering is going on for civil works. Construction period is five years from 01-04-2007.
	Sub-Total (WB)			120			
	Orissa						
17	Jalaput Dam Toe Private	OPCL	3x6	18	69.68*	31.01.03	E&F clearance not applicable.
	Sub-Total (Orissa)			18			
	Sikkim						
18	Teesta St-IV Central/ North Sikkim	NHPC	4x130	520	3594.74 (07/09)	13.05.10	EC awaited, FC-I cleared on 26.02.2013. FC-II awaited.
19	Panan Private	HHPL	4x75	300	1833.05*	07.03.11	EC obtained on 2.1.2007 and FC obtained on 6.10.2010. Tie-up of finances under process. Bid evaluation is under final stages.
	Sub-Total (Sikkim)			820			
	Kerala						
20	Athirappilly State	KSEB	2x80+2x1.5	163	385.63 (2004-05)	31.03.05	Project was referred by MOEF to Western Ghats Ecology Expert Panel (WGEEP) constituted by MOEF in Feb., 2010 to study ecologically aspects. WGEEP has recommended to MOEF that Athirappilly – Vazachal area should be protected as such and the permission for the proposed hydro-electric project at Athirappilly should not be given.
	Sub-Total (Kerala)			163			
	Andhra Pradesh						
21	Indirasagar (Polavaram) State	APGENCO	12x80	960	3013.68 (2010-11)	21.02.12	EC approval on 25.10.05. Against an appeal, NEAA quashed clearance on 19.12.07 on ground of public hearing not acceptable in Orissa & Chhattisgarh. Against appeal of GO AP, HC of AP on 31.12.07 suspended order of NEAA until further orders.
	Sub-Total (AP)			960			
SI No.	Scheme/ Sector	Agency	Nos. x MW	IC (MW)	Est Cost (Rs Crs.) PL	CEA Concurrence	Remarks

SI	Scheme/ Sector	Agency	Nos. x MW	IC	Est Cost	CEA	Remarks
	Karnataka						
22	Gundia State	KPCL	1x200	200	1119.56 (11/07)	25.04.08	Project was referred by MOEF to Western Ghats Ecology Expert Panel (WGEEP) constituted by MOEF in Feb., 2010 to study ecologically aspects. WGEEP has
							Submitted its report to MOEF indicating that MOEF need not to permit the execution of Gundia HEP as the loss of diversity and environmental impacts would be significant. MOEF sought for opening of GOK on this report and the same has already been submitted to MOEF. Centre has constituted a committee under Chairmanship of Dr. Kasturirangan, Member Planning Commission to prepare a road map for implementation of infrastructure projects that would not affect environment. Committee held a meeting on 21.8.12 at New Delhi and details sought have been furnished. On 13.01.2013 Dr. Kasturirangan with a high level working group has visited the Project. Director, MOEF has sought some more details on 31.01.2013. Which were furnished. EC obtained.
	Sub-Total (Kar)			200			
	Manipur						
23	Tipaimukh Central	NHPC	6x250	1500	5163.86 (12/02)	02.07.03	EC approved on 24.10.08. FC is under process. Project is proposed to be undertaken through JVC (NHPC-69% SJVNL - 26%, Govt of Manipur-5%.
24	Loktak D/S Central	LDHCL	2x33	66	867.67 (10/06)	Concurrence transferred, from NHPC to LHDC on 6.8.12 validity of concurrence extended upto 14.11.14 on 24.01.13	EC & FC yet to be cleared by MOEF.
	Sub-Total (Mani)			1566			
	Ar. Pradesh						
25	Dibang Central	NHPC	12x250	3000	15886.39 (11/07)	23.01.08 Concurrence validity extended up to 22.1.2013 on 07.06.2012	EC & FC yet to be cleared by MOEF.
26	Dibbin Private	KSKDHPL	2x60	120	728.54*	04.12.09	F.C of St-I obtained on 7.2.2012 & awaited for St- II. E.C accorded on 23.7.2012.
27	Lower Siang Private	JAVL	9x300	2700	19990.74*	16.02.10	EC & FC yet to be cleared by MOEF.
28	Nafra Private	SNEL	2x60	120	848.22*	11.02.11	EC Obtained on 17.1.2011, ST-I Forest clearance obtained on 12.7.2011 and St.-II Clearance obtained in June, 2012.
29	Nyamjang Chhu Private	BEL	6x130	780	6115.6*	24.03.11	EC obtained on 19.4.12. St-I FC obtained on 9.4.2012 & St-II awaited.
30	Tawang St-I Central	NHPC	3x200	600	4824.01 (5/10)	10.10.11	Environment clearance accorded on 10.6.11. Forest clearance proposal forwarded by State Govt. to MOEF on 21.08.2011. FC awaited.
SI	Scheme/ Sector	Agency	Nos. x MW	IC	Est Cost	CEA	Remarks

No.				(MW)	(Rs Crs.) PL	Concurrence	
31	Tato-II Private	THPPL	4x175	700	5616.20 *	22.5.12	Environment clearance accorded on 27.6.11. Forest clearance awaited.
32	Tawang St-II Central	NHPC	4x200	800	6112.3 (05/10)	22.09.11	EC accorded on 10.06.11. FC –II expected soon.
33	Demwe Lower Private	ADPL	(5x342 +1x40 MW)	1750	13144.91*	20.11.09	EC accorded on 12.02.2010. In principle Forest Clearance accorded on 01.3.2012. Stage-II forest clearance obtained in May, 2013.
34	Gongri Private	DEPL	2x72	144	1436.27 (Compl.)	04.02.2013	EC obtained on 21.03.13 and forest clearance obtained on 07.09.2012.
35	Hirong Private	JAPL	4x125	500		10.04.2013	EC & FC awaited.
	Sub-Total (ArPr)			11214			
	Mizoram						
36	Kolodyne St-II Central	NTPC	4x115	460	5188.13 (10/10)	14.09.11	Revised TOR submitted on 26.7.11. Forest proposal submitted to State Govt. on 20.12.2010. EC & FC awaited.
	Sub -Total (Mizo)			460			
	Total : All India			20873			

* : Completion Cost EC: Environment ClearanceFC: Forest ClearanceJVC: Joint Venture Company

Annexure-II*(Vide Para No.1.22 of the Report)***Hydro-Electric Schemes under Examination in CEA/ CWC/ GSI**

Sl. No.	Scheme/ (State)	IC (MW)	Est. Cost (Rs. Crs.) Price Level	Month of Receipt	Status
1	Kiru (J&K)	660	4068.13 (01/2012)	08/2012	Project accepted for examination during presentation meeting held on 15.10.2012. Hydrology, pondage, inter-State, instrumentation and power evacuation aspects cleared.
2	New Ganderwal (J&K)	93	859.99 (08/12)	10/2012	Project accepted for examination during presentation meeting held on 27.11.12. Hydrology, PPS and power evacuation aspects cleared.
3	Kirthai-I (J&K)	390	1257.78 (06/02)	01/13	DPR was accepted for details examination during the meeting held on 02.05.2013. Hydrology, PPS and inter-State aspects cleared.
4	Seli (HP)	400	2891.97 (12/11)	Dec-11	Presentation held on 13.01.2012 & DPR taken under examination. Hydrology, PPS, CMDD, Instrument., FE&SA Power evacuation, GSI, interstate & CSMRS aspects cleared.
5	Chhatru (HP)	126	1367.24 (Jan, 2012)	04/2012	Project accepted for examination during presentation meeting held on 06.7.2012. Hydrology, PPS, instrumentation, inter state, power evacuation, E&M design, CSMRS and GSI aspects cleared.
6	SachKhas (HP)	267	1740.19 (09/2012)	01/13	Project accepted for examination during presentation meeting held on 21.02.2013 and DPR taken under detailed examination. Hydrology & PPS cleared.
7	Luhri (HP)	588	5987.31 (01/13)	03/2013	Hydrology, PPS, International, inter-State, gates design, instrumentation, CMDD and FE&SA aspects cleared.
8	JelamTamak (Uttarakhand)	108	1290.24 (9/2012)	12/2012	Hydrology, PPS, inter-State, International, instrumentation and power evacuation aspects cleared.
9	Bowala Nand Prayag (Uttarakhand)	300		08/12	Hydrology, PPS, International, inter-State, gates design, FE&SA, plant planning and instrumentation aspect cleared.
10	Dagmara (Bihar)	130	1172.33 (without IDC) (03/2011)	04/12	Concurrence meeting held on 20.03.2013. During meeting, it was concluded that concurrence of Dagmara HEP could not be accepted by the Authority due to high Project cost & tariff.

Sl. No.	Scheme/ (State)	IC (MW)	Est. Cost (Rs. Crs.) Price Level	Month of Receipt	Status
11	Kalai –II (Ar. Pradesh)	1200	7151.86 (Jan, 2012)	04/2012	Project accepted for examination during presentation meeting held on 06.7.2012. Hydrology. Power evacuation, PPS, interstate, HCD, E&M design, International, Instrumentation and CSMRS aspects are cleared.
12	Siyom (Ar. Pradesh)	1000	8987.27 (Completion)	9/10	All clearance received except plant planning, civil quantities, cost of civil works and phasing.
13	Naying (Ar. Pradesh)	1000	8748.65 (Completion)	05/11	All clearance received except cost of civil works and phasing.
14	Tagurshit (Ar. Pradesh)	74	556.82 (03/12)	07/2012	Project accepted for examination during presentation meeting held on 22.08.2012. Hydrology, PPS, Inter-State, CMDD, HCD and Instrumentation aspects cleared.
15	Demwe Upper (Ar. Pradesh)	1080	7769.96 (06/2012)	07/2012	STC on conversion of Storage Scheme to ROR Scheme in its meeting held on 29.11.2012 has cleared the project. As per recommendation of STC, developer submitted revised PPS. Replies to comments on PPS received on 13.06.2013. DPR cleared from hydrology, instrumentation, inter-State & power evacuation aspects.
16	Nyukcharong Chu (Ar. Pradesh)	96	995.90 (Completion)	01/2013	DPR was accepted in Presentation meeting held on 04.03.2013. PPS & hydrology cleared.
17	Dikhu (Nagaland)	186	1249 (Completion)	04/12	All aspects cleared except GSI, CSMRS, cost of civil works and phasing.
18	Kyunshi-I (Meghalaya)	270	2418.44 (Completion)	02/2013	Project accepted for examination during presentation meeting held on 14.03.2013. PPS & Hydrology cleared.
19	Tato-I (Ar. Pradesh)	186	1856.74 (12/2012)	05/2013	Presentation held on 04.06.2013 & DPR taken into under examination. PPS & Hydrology cleared.
20	Umngot (Meghalaya)	240	1564.62 (06/2010)	03/2013	Presentation held on 04.06.2013 & DPR taken into under examination. Cleared from hydrology.
21	Lower Kopili (Assam)	120	1489.64 (11/2012)	03/2013	Hydrology and PPS cleared.
22	Talonglonda (Ar. Pradesh)	225	2230.90 (Completion)	09/2010	Concurrence meeting held on 30.04.2013. Concurrence letter to be issued.
23	Etalin (Ar. Pradesh)	3097	25296.95 (Completion)	02/2012	Concurrence letter issued on 12.07.2013.
	Total	11836			

Annexure-III*(Vide Para No. 1.27 of the Report)***Hydro-Electric Schemes Returned to Project Authorities –
(Year 2002-03 onwards)**

Sl. No.	Scheme/ Sector/ Executing Agency/ (No.xUnit Capacity)	IC (MW)	Est. Cost (Rs. Crs.)/ PL	Month of Receipt / Return	Reason for return/Status
	NORTHERN REGION				
	J & K				
1	Sawalkot STATE/JKPDC (6x200)	1200	7346 (12/2000)	05/06 05/06	Returned due to non-responsive to various observations such as hydrology, hydro planning, cost of civil works, geological aspects etc. Revised DPR Chapters on Dam, HCD, HM and E&M design have been submitted.
2	Kirthai-II STATE/JKPDC (6x165)	990	5707.22 (09/08)	04/11 09/12	Returned due to various reasons including the revision in power planning aspects on account of environmental flows to be considered during monsoon & non monsoon period, higher cost estimates and revision of cost at current price level.
3	Kwar Joint Venture/ CVPP/ (4x140)	560	4375.50 (01/12)	07/2012 10/2012	Returned due to review of layout of HRT, provision of surge shaft in place of looping surge galleries, relocation of Power House and reduction of length of TRT.
	Uttarakhand				
4	Bhaira Ghati State/UJVNL (3x127)	381	2033.37 (06/07)	11/07 01/08	Returned due to incomplete geological investigations.
5	Mori Hanol PRIVATE/KKHPL (2x31.5)	63	620.51 (Completion)	12/09 01/10	Returned due to non availability of updated hydrology and cost estimates. Also geological investigations are inadequate. Hydrology approved on 01.9.12 .PPS approved on 07.9.12
6	Bogudiyar Sirkari Bhyol/PRIVATE /GGHPL (2X73)	146	1138 (3/09)	04/10 09/10	Returned due to inadequate geological investigations. Hydrology approved by CWC 4.11.10. PPS approved by CEA on 28.4.11.
7	TiuniPlasu State/Deptt. of Irrigation (3x24)	72	829.53 (Completion)	08/10 10/10	Returned due to incomplete geological investigations, higher cost etc. PPS & Hydrology approved by CEA & CWC on 16.8.12 & 3.10.11.
S. No.	Scheme/ Sector/ Executing Agency/ (No.xUnit Capacity)	IC (MW)	Est. Cost (Rs. Crs.)/ PL	Month of Receipt / Return	Reason for return/Status

8	Nand PrayagLangasu State/ UJVNL (4x25)	100	1401.21 (8/10)	03/11 04/11	Acceptance meeting held on 04.4.11 and DPR returned due to high cost, inadequate geological investigations, review of design of civil structures i.e. Barrage, surge shaft, Butterfly valve etc. Revised DPR is awaited.
	Himachal Pradesh				
9	Integrated Kashang St-I STATE/HPPCL (2x65)	130	1676.85 (09/07)	10/07 08/08	Project withdrawn by HPSEB
10	Bara Bhanghal Pvt./MPCL (3x66.67)	200	1926.7 (completion)	06/11 06/11	Acceptance meeting held on 28.6.2011, DPR returned due to inadequate geological investigations, environmental & wild life issues, review of I.C. & Cost.
11	ChangoYangthang Pvt./MPCL (3X46.67)	140	1288.43 (10/10)	04,11 12,11	Returned due to non replying to comments. Revised DPR is awaited.
	Total NR	3982			
	WESTERN REGION				
	Madhya Pradesh				
12	Sone/ STATE/ /MPEB (5x20)	100	706.49 (4/98)	3/2003 4/2003	Returned to MPEB due to nonfurnishing of basic inputs/clearances.
	Total WR : 1 Nos.	100			
	SOUTHERN REGION				
	Karnataka				
13	Sivasamudram/ State/KPCL/ (3x100+3x15)	345	1325.66 (2011-12)	04/2012 05/2012	Presentation meeting held on 16.5.2012 as it involves interstate issues, DPR could not be processed and returned.
14	Mahadayi STATE/KPCL (2X10+2X150)	320	850 (Completion)	7/2002 8/2002	Returned due to non-tie up of inputs/clearances. The project involves interstate aspects.
	Tamilnadu				
15	Kundah/State/ TNEB/(4x125)	500	1005.2 (10/07)	11/06 12/07	Returned due to non-resolution of interstate aspects.
	Andhra Pradesh				
16	Dummgudem STATE/ APGENCO (6x50.8+1x14.76)	320	2200	3/06 3/06	Returned due to non-replying of various comments such as on hydro planning, cost of E&M works, hydel civil Engineering, geological aspects etc..
	Total SR	1485			

S. No.	Scheme/ Sector/ Executing Agency/ (No.xUnit Capacity)	IC (MW)	Est. Cost (Rs. Crs.) PL	Month of Receipt / Return	Reason for return/Status
EASTERN REGION					
Sikkim					
17	Teesta St-II PRIVATE/HUIPL (4x120)	480	3466.26 (Completion)	3/07 5/07	Presentation meeting was held on 01.5.07. DPR could not be accepted for examination due to incomplete geological investigations. Review of dam location. Back water studies to be carried out.
18	Lethang HEP Private/KHCHPL (3x32)	96	525.11 (1/10)	'1/10 4/10	Presentation of the project held on 12.04.10. DPR was not accepted for examination due to lacks of barrage v/s dam design, review of I.C.,review of spillway capacity etc.
Total ER		576			
NORTH-EASTERN REGION					
Assam					
19	Karbi Langpi State/ASEB (2x30)	60	734.52 06/08	11/08 12/08	Returned due to involvement of inter state aspects with Meghalaya, updated hydrology not been utilized for carrying out power potential study, cost estimates not framed at current PL and inadequate geological investigations etc.
Arunachal Pradesh					
20	Ranganadi St-II CENTRAL/ NEEPCO (2x65)	130	1120.31 2/06	4/06 4/06	NEEPCO has been asked to review the scheme and resubmit DPR after cost and tariff are brought down. MOU with State Govt. yet to be signed.
21	Yamne St-II Pvt/ SSYEVPL (3x28)	84	819.97 (completion)	03/11 05/11	DPR returned due to inadequate geological investigations at dam site, diversion tunnel, surge shaft & power house etc.
22	Heo Pvt/ HHPPL (3x70)	210	1626 (completion)	03/11 05/11	DPR returned due to inadequate geological investigations at dam site, diversion tunnel, surge shaft & power house etc.
23	Hutong -II HEP Private./MEIPL Ar. Pradesh (6x200)	1200	11490.89 (Completion)	02/12	Presentation was held on 23.03.2012 and DPR taken under examination. The DPR was returned on 24.5.12 as the scheme is now to be developed as storage scheme. Hydrology & PPS cleared on 9.5.2011 & 27.3.2012.

S. No.	Scheme/ Sector/ Executing Agency/ (No.xUnit Capacity)	IC (MW)	Est. Cost (Rs. Crs.) PL	Month of Receipt / Return	Reason for return/Status
24	Kalai-I/ Private/ M/s MFIPL (6x216.67+2x26)	1352	15306.77 (Completion)	01/12 05/12	STC decided that M/S MFIPL should carry out the detailed investigation for the revised DPR as per CEA's letter dt 24.5.2012.
25	Pemashelphu HEP/ Private (3x30)	90	577.35 (05/2010)	07/11 02/13	Returned due to non replying of the comments and likely change in location of Dam and benefits from the project.
26	Sissiri/ Private (2x50)	100	1395.03	12/09 02/13	PPS & Hydrology cleared. Project was under consideration of STC due to conversion of storage Scheme to ROR Scheme. STC Cleared the Scheme as ROR scheme vide letter dated-14.12.2012. Presentation meeting held on 21.02.2013. DPR could not be accepted to detailed examination as representation of State Govt. pointed out that irrigation and drinking water component should be internal part of two project and cost of same should be included in cost of project.
27	Gimliang/ Private (2x40)	80	786.86 (3/2013)	04/2012 06/2013	DPR returned during presentation meeting held on 03.5.2013 due to inadequate geological investigation. Developer was told to submit revised DPR after carrying out necessary investigation and IC got fixed by CEA.
28	Raigam/ Private (3x47)	141	1163.71 (03/2013)	04/2012 06.2013	DPR was not accepted for examination during presentation meeting held on 03.5.2013 and was returned on 20.06.2013 as power potential studies & civil design aspects are to be firmed up and geological investigations are inadequate.
	Total N E R	3447			
	All India Total	9590			

ANNEXURE-IV

**MINUTES OF THE TENTH SITTING OF THE STANDING COMMITTEE ON ENERGY (2012-13) HELD ON
11th JULY, 2013 IN COMMITTEE ROOM 'C' PARLIAMENT HOUSE ANNEXE.**

The Committee met from 1100 hrs. to 1325 hrs.

PRESENT

Shri Mulayam Singh Yadav - **Chairman**

Lok SABHA

2. Shri Shripad Yesso Naik
3. Shri Ravindra Kumar Pandey
4. Shri A.Raja
5. Shri Gutha Sukhender Reddy
6. Shri Bajju Ban Riyan
7. Shri Nripendra Nath Roy
8. Shri C.L. Ruala
9. Shri Jagada Nand Singh

RAJYA SABHA

10. Shri Shyamal Chakraborty
11. Shri Bhubaneswar Kalita
12. Shri Bhagat Singh Koshyari
13. Shri Kiranmay Nanda
14. Dr. Anil Kumar Sahani
15. Shri Birender Singh
16. Shri K.C.Tyagi

Secretariat

1. Shri Brahm Dutt - Joint Secretary
2. Shri N.K.Pandey - Director
3. Smt. L.Nemjalhing Haokip - Under Secretary

LIST OF WITNESSES

Ministry of Power

- | | |
|---------------------------|------------------------|
| 1. Shri P.K.Sinha | Secretary |
| 2. Shri Ashok Lavasa | Addl. Secretary |
| 3. Shri Devendra Chaudhry | Addl. Secretary |
| 4. Smt. Jyoti Arora | Joint Secretary |
| 5. Shri I.C.P. Keshari | Joint Secretary |
| 6. Shri B.N. Sharma | Joint Secretary |
| 7. Smt. Rita Acharya | Joint Secretary |
| 8. Shri Rakesh Jain | Joint Secretary & F.A. |

Central Electricity Authority

- | | |
|---------------------|-------------|
| 1. Shri A.S. Bakshi | Chairperson |
|---------------------|-------------|

Public Sector Undertakings/ Autonomous Bodies/Statutory Bodies

- | | |
|-----------------------|----------------|
| 1. Shri R.N. Nayak | CMD, Powergrid |
| 2. Shri G. Sai Prasad | CMD, NHPC |
| 3. Shri Rajeev Sharma | CMD, REC |
| 4. Shri Satnam Singh | CMD, PFC |
| 5. Shri R.P.Singh | CMD, SJVNL |
| 6. Shri R.S.T. Sai | CMD, THDC |
| 7. Shri P.C. Pankaj | CMD, NEEPCO |
| 8. Shri R.N.Sen | Chairman, DVC |
| 9. Shri A.B. Agrawal | Chairman, BBMB |
| 10. Shri S.K. Soonee | CEO, POSCO |

2. At the outset, the Chairman welcomed the Members of the Committee and the representatives of the Ministry of Power to the sitting of the Committee and apprised them of the provisions of Directions 55(1) and 58 of the Directions by the Speaker regarding confidentiality of the proceedings of the Committee. The Committee also congratulated newly appointed Secretary of the Ministry of Power and expressed their confidence that he will take the Sector to the next level.

3. After introducing themselves to the Committee, the representatives of the Ministry of Power made a power-point presentation on Development of Hydro Sector – an Evaluation and Fast tracking, and briefed the Committee about the various aspects of the subject.

4. The Committee *inter-alia* discussed with the representatives of the Ministry of Power the following important points:-

- i) The share of Hydro Power in the total installed capacity of power generation in the Country and the reasons responsible for its constant decrease -plan after plan.
- ii) Assessment of Hydro Electric Potential available in the Country and the efforts being made to harness it optimally. Need for better coordination among various Center and State Government agencies.
- iii) Targets and achievement in terms of capacity addition in hydro sector during the 11th Plan – reasons for achieving only fraction of the set targets.
- iv) Targets and achievements in terms of capacity addition in hydro sector in the 12th Plan – reasons for slow progress and the efforts being made to fully achieve the set targets.
- v) Status of various ongoing hydro power projects and the problem being faced in their development.
- vi) Damage to the hydro power plants by flash flood in the Uttrakhand – lessons learnt from this natural calamity and the effects on the designs/development of the upcoming hydro power projects.
- vii) Private Sector in Hydro Power – prospects and response so far, efforts to make the Hydro Sector more attractive by providing fiscal/financial intervention and hassle free grant of various clearances.
- viii) Pumped Storage Scheme, potential and installed capacity – their relevance and economic viability of the projects particularly where there is acute shortage of power even during the off peak time.
- ix) Impact of hydro power projects on eco-system /aquatic life – need for involvement of fishery department in granting clearance/finalization of height of dams for hydro power projects.

5. The Members sought clarifications on various issues relating to the subject and the representatives of the Ministry responded to the same. The Committee directed the representatives of the Ministry to furnish written replies to the queries which could not be covered during evidence.

6. X X X X X X X X X X X X X

7. A verbatim record of the proceedings of the sitting of the Committee has been kept.

The Committee then adjourned.

**MINUTES OF THE FIFTH SITTING OF THE STANDING COMMITTEE ON ENERGY
(2013-14) HELD ON 11TH DECEMBER, 2013 IN COMMITTEE ROOM '62'
PARLIAMENT HOUSE, NEW DELHI**

The Committee met from 1030 hrs. to 1100 hrs.

PRESENT

LOK SABHA

Shri Mulayam Singh Yadav - Chairman

17. Shri P.C. Chacko
18. Shri Shripad Yesso Naik
19. Shri Ravinder Kumar Pandey
20. Shri Padamsinha Bajirao Patil
21. Shri A. Raja
22. Shri Bajju Ban Riyan
23. Shri Nripendra Nath Roy
24. Shri Jagada Nand Singh
25. Smt. Pratibha Singh
26. Shri Vijay Inder Singla

RAJYA SABHA

27. Shri Bhubaneswar Kalita
28. Shri Kiranmay Nanda
29. Dr. Anil Kumar Sahni
30. Shri Motilal Vora

SECRETARIAT

1. Shri Brahm Dutt - Joint Secretary
2. Shri N.K. Pande - Director
3. Smt. L.Nemjalhing Haokip - Under Secretary

2. At the outset, the Chairman welcomed the Members and briefly apprised them of the agenda for the sitting. The Committee then took up for consideration of the following draft Reports:

- i) 41st Report on 'Implementation of Rajiv Gandhi Grameen Vidyutikaran Yojana'.
- II) 42nd Report on Action Taken by the Government on the recommendations contained in the 36th Report on 'International Cooperation in New and Renewable Energy Sector'.
- III) 43rd Report on 'Development of Hydro Sector'.
- IV) 44th Report on Action Taken by the Government on the recommendations contained in the 37th Report on 'Development of National Grid'.

4. After discussing the contents of the Reports in detail, the Committee adopted the aforementioned draft Report without any change.

5. The Committee also authorized the Chairman to finalise the above-mentioned Report and present the same to both the Houses of Parliament in the current Session.

6. The Committee placed on record their appreciation for the invaluable assistance rendered to them by the officials of the Lok Sabha Secretariat attached to the Committee.

7. X X X X X X X X X X X X X

The Committee then adjourned